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BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

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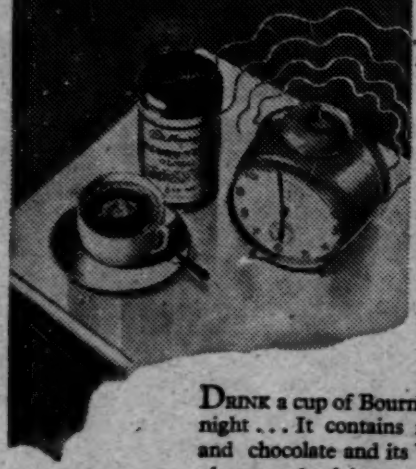

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LONDON SATURDAY SEPTEMBER 16 1944

LABORATORY TESTS IN THE DIAGNOSIS OF LIVER DISEASE

A REPORT ON THREE PROCEDURES

BY

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Two important trends in recent work on liver function tests are noticeable at the present time. The first is a broad division between those which test known or accepted functions of the liver and certain empirical procedures which do not test known functions but which are obviously correlated either with certain types of liver damage or with certain diseases in which liver damage is prominent. Among the former the most important are the serum bilirubin estimation, galactose and laevulose tolerance tests, serum protein and urinary urobilin estimations, and the hippuric acid test. The latter include estimation of the serum alkaline phosphatase and choline-esterase activity and the flocculation tests (i.e., the Takata-Ara reaction, the serum colloidal gold reaction, and the cephalin-cholesterol test). The flocculation tests are thought to depend upon an increase in the gamma globulin content of the serum, and the hepatic origin of this protein has not been proved. Nevertheless positive results occur principally in diseases in which liver damage is known to be present. The former tests, with certain exceptions, tend to give similar results in all types of liver damage, while some of the latter show striking differences and therefore promise more diagnostic help.

The second trend is the increased sensitivity of most of the tests as compared with those in use 15 years ago. While the earlier complaints of negative results in cases of known hepatic insufficiency have largely disappeared, we are now faced with the opposite finding of a proportion of positive results in a variety of diseases not primarily affecting the liver, such as pneumonia (Curphey and Solomon, 1938), hyperthyroidism (Althausen and Wever, 1937; Haines, 1939; Maclagan and Rundle, 1940), rheumatoid arthritis (Rawls *et al.*, 1937), following surgical operations (Boyce, 1941), and in scarlet fever, diphtheria, and tuberculous meningitis (Meneghello and Drinberg, 1943). It is hardly surprising that liver function should be impaired in general intoxications of this type, but it complicates the question of interpretation since we need to distinguish between functional impairment and structural damage.

The three procedures described here were originally chosen because they appeared to give the maximum chance of differentiating toxic from obstructive jaundice, but they happen to include one example from each of the three main groups—i.e., a flocculation test, an enzyme test, and a purely functional test. This selection is not intended to preclude the use of other tests such as the serum bilirubin and urinary urobilin estimations, which are both of particular value in patients not obviously jaundiced and the first of which is indispensable as a record of the intensity of jaundice when present. The serum protein estimation and the hippuric acid tests also have their special merits, but on the whole their value has been greater in prognosis than in diagnosis (Foley *et al.*, 1937; Higgins *et al.*, 1944; Quick, 1933, 1939; Boyce, 1941).

I. Serum Colloidal Gold Reaction

Introduced by Gray in 1940, this appears at present to be the best of the flocculation tests from the diagnostic standpoint. It does not test any known function of the liver and should be regarded as an indicator of disturbed liver metabolism rather than a function test. The results reported here were obtained by a modified method, described elsewhere (Maclagan, 1944a), in which 0.05 ml. of serum, 0.5 ml. of special buffer solution at *p*H 7.8, and 2.5 ml. of gold sol prepared by Patterson's (1931) method are mixed in a single tube. 5 represents complete precipitation of the sol and is the strongest positive, while 0 represents no precipitation and is a negative or normal result. The reaction apparently depends upon an excess of gamma globulin in the serum (Gray and Barron, 1943; Kabat *et al.*, 1943); it is thus not directly dependent upon either the total globulin or the albumin–globulin ratio. This was shown by Gray (1940), but also holds for the modified technique used here (Table I).

TABLE I.—*Serum Proteins (G.%) and Gold Reaction in 24 Cases*

Case No.	Gold (No.)	Albumin (Normal 4·0–5·5)	Globulin (Normal 1·5–3·0)	Total (Normal 6·0–8·0)	Diagnosis
1	5	2·4	7·8	10·2	Infective hepatitis
2	5	4·0	2·9	6·9	" "
3	5	3·7	2·7	6·4	" "
4	5	4·3	2·2	6·5	" "
5	4	3·9	3·2	7·1	" "
6	5	2·9	3·0	5·9	" "
7	5	3·3	3·6	6·9	" "
8	3	3·7	2·8	6·5	" "
9	0	3·9	2·2	6·1	" "
10	4	3·0	3·2	6·3	Arsenical jaundice
11	5	2·5	5·5	8·0	Subacute hepatitis*
12	5	3·9	2·3	6·2	" "
13	5	1·4	6·4	8·2	" "
14	5	2·1	4·0	6·1	Cirrhosis
15	5	2·5	3·2	5·7	"
16	5	2·3	4·5	6·8	"
17	5	3·4	2·2	5·6	Bacterial endocarditis
18	5	1·7	2·6	4·3	" "
19	0	1·8	1·6	3·4	Nephritis
20	0	1·8	2·0	3·8	"
21	0	2·5	1·6	4·1	"
22	0	4·6	2·2	6·8	"
23	0	3·3	2·4	5·7	"
24	0	3·6	3·2	6·8	Biliary obstruction, recurrent

* Subacute hepatitis is used here to indicate hepatitis with jaundice of more than two months' duration (Higgins *et al.*, 1944) but without ascites. The dividing line between this condition and cirrhosis is difficult to draw, and the biochemical findings are very similar in the two.

It will be seen from Table I that, although there is some correlation with the total serum globulin, nearly half the cases with strongly positive gold reactions had normal globulin figures, and one case of recurrent biliary obstruction had a raised globulin and a negative gold reaction. The inversion of the albumin–globulin ratio in nephritis was associated with negative gold tests. These protein estimations were performed by the manometric method of Peters and van Slyke (1932), using the selenate digestion mixture of Beaumont and Dodds (1941). The globulins were precipitated with 22.5% sodium sulphate.

Table II gives the serum colloidal gold reactions in 319 cases of liver disease. It will be seen that the test is usually positive in infective hepatitis (93%) and in cirrhosis, and is negative in jaundice due to biliary obstruction (93%). It usually remains negative in obstructive jaundice in spite of increasing liver damage as shown by other tests—e.g., the galactose index—and is therefore of value in distinguishing this condition from the first two. A strongly positive gold reaction (4 or 5+) has not been seen in obstructive jaundice, and is thus of more help in this connexion than a negative result, which does not absolutely exclude infective hepatitis. The results in infective hepatitis are usually maximal at the onset of jaundice and

become negative after 3 to 6 weeks, although sometimes persisting much longer. In cirrhosis there is little change from month to month, so that repeated observations help to decide between these two. In arsenical jaundice—i.e., jaundice occurring during antisyphilitic treatment—and also in Weil's disease negative results are frequent (about 60%) and make the distinction from biliary obstruction more difficult, but fortunately this is rarely a clinical problem. The rather striking difference between the infective and the arsenical cases has been noted elsewhere (Maclagan, 1944b), and suggests a probable aetiological difference in the two groups. In liver abscess and in amyloidosis results have been mainly negative.

TABLE II.—*Serum Colloidal Gold Reaction in 319 Cases*

	Precipitation Number						Totals	% Pos.
	5	4	3	2	1	0		
Obstructive jaundice	0	0	0	3	0	39	42	7
Infective hepatitis	84	24	22	10	7	11	158	93
Cirrhosis and subacute hepatitis	12	0	0	0	0	0	12	100
Arsenical jaundice	5	5	4	6	7	35	62	44
Weil's disease (jaundiced)	0	0	3	2	3	11	19	42
Weil's disease (not jaundiced)	0	1	1	1	1	10	14	29
Toxic jaundice	0	0	0	1	0	2	3	
Amyloidosis	0	0	0	1	1	5	7	
Liver abscess	0	0	0	0	0	2	2	

As with most other liver function tests some positive results occur in heart failure, in severe chronic anaemia, and in various acute and chronic infections, of which the following are the most important: glandular fever, atypical pneumonia, infective endocarditis, advanced pulmonary tuberculosis, and rheumatoid arthritis (Maclagan, 1944a). In this group the liver involvement was obviously only an incident in the primary disease, but such conditions might complicate obstructive jaundice, when due allowance would have to be made. In practice they can usually be eliminated without difficulty by other means.

Finally, it should perhaps be emphasized that the results given here are not the same as those obtained with Gray's (1940) original technique, which has been adversely criticized by Mateer *et al.* (1942). The technical details referred to above must be followed exactly if comparable results are to be obtained.

II. Serum Alkaline Phosphatase

This estimation, like the gold reaction, does not test any known function of the liver, and raised values are found in infancy and in a variety of bone diseases. In spite of this the test has been much used in jaundice since Roberts's (1933) observation that the level is usually higher in obstructive than in other types of jaundice. The 136 results in Table III were obtained by the method of King and Armstrong (1934).

TABLE III.—*Serum Alkaline Phosphatase in 136 Cases*

	Range of Values (Normal 3–13 Units)						
	0–13	14–24	25–35	36–45	46–55	56–80	Totals
Obstructive jaundice	0	3	7	13	11	9	43
Infective hepatitis	6	35	6	0	0	0	47
Cirrhosis and subacute hepatitis	0	6	3	2	2	1	14
Arsenical jaundice	8	12	2	0	0	0	22
Toxic jaundice	1	3	0	0	0	0	4
Amyloid disease	0	0	2	1	0	0	3
Liver abscess	0	0	2	0	1	0	3

It will be seen that the test is of some value in distinguishing biliary obstruction on the one hand—usually over 35 units—from infective hepatitis and arsenical jaundice on the other—usually below 25 units and may be within normal limits. However, 15 of these cases fall into the doubtful range (25–35 units), and 3 of the obstructive cases were below 25 units. This is about the same degree of overlap reported by others (Gutman *et al.*, 1940; Giordano *et al.*, 1939; Higgins *et al.*, 1944). If, however, cirrhosis has to be considered the test is of much less value, as figures over 35 are frequent in this condition. In liver abscess and in amyloid disease a raised phosphatase is often present, and may be the only biochemical indication of disturbed liver metabolism.

III. Galactose Index

This index (Maclagan, 1940) is the sum of the four blood-galactose values at 1/2, 1, 1½, and 2 hours after the oral administration of 40 g. of the sugar. The estimations were performed mainly on capillary blood as previously described, the results being read from the table given below (see Appendix). This table is based on figures given in the reference cited above and does not involve any alteration in the method. The normal limits for the galactose index, based on 50 normal subjects, are 0–160 (0–110 for male medical students). The test is contraindicated by nausea or vomiting from any cause.

TABLE IV.—*Galactose Index in 145 Cases*

	Range of Values (Normal 0–160)						
	0–160	161–200	201–300	301–400	401–500	501–600	Totals
Obstructive jaundice	23	3	7	4	2	0	39
Infective hepatitis	4	5	15	8	3	1	36
Cirrhosis and subacute hepatitis	0	1	8	2	2	0	13
Arsenical jaundice	0	1	2	6	1	2	12
Toxic jaundice	0	0	2	1	1	0	4
Hyperthyroidism (from Maclagan and Rundle, 1940)	11	7	16	4	3	0	41

It will be seen from Table IV that the index is nearly always above normal in infective hepatitis, arsenical jaundice, and cirrhosis, but is frequently normal in jaundice due to biliary obstruction. Considerable impairment of function can, however, be demonstrated in certain cases of obstructive jaundice, particularly after the first three weeks, in febrile or cachectic patients, and after repeated attacks of obstruction (Maclagan, 1941). The only normal results in the toxic and infective group were in 4 cases of infective hepatitis in young adults from the Services, a class of patient in which liver function is no doubt above the average. The test is therefore of some value in distinguishing these two groups if interpreted with due regard to clinical data. A normal result in an elderly jaundiced patient is of particular diagnostic value and has so far been seen only in obstructive jaundice. It is also useful as an extra aid in cases in which the gold and phosphatase tests are equivocal and for assessing the degree of liver damage when present.

The test has also been much used in hyperthyroidism, in which there is impaired tolerance in a high proportion of cases (Althausen *et al.*, 1940; Maclagan and Rundle, 1940; Barnes and King, 1943; and Table IV). Some workers have found it as sensitive as the B.M.R. in diagnosis, although Rundle and I got values decisively above normal in only 75% of our cases; it is agreed that the test is less affected by iodine therapy than is the B.M.R. There is some difference of opinion as to the mechanism involved, since both liver damage and increased intestinal absorption have to be considered. Most recent articles express the view that both factors contribute to the results in hyperthyroidism (Lichtman, 1941; Grauer *et al.*, 1942; Rosenkrantz *et al.*, 1942).

Discussion

It is now generally agreed that a combination of liver function tests yields more information than any one test, and this is particularly true of those described here. Liver function tests are useful in three principal types of case.

1. *Suspected Liver Disease in Non-jaundiced Patients.*—The three tests appear to be sensitive enough to detect cirrhosis, and in common with others they also indicate hepatic involvement in a variety of other diseases such as hyperthyroidism (galactose index), heart failure and various infections (serum colloidal gold reaction), and in liver abscess and amyloidosis (serum alkaline phosphatase). In this group the pigmentary tests—serum bilirubin and urinary urobilin estimations—reach their maximum degree of usefulness and should not be omitted, but they may sometimes be completely negative in cases with known liver damage.

2. *Jaundice of Known Origin.*—The galactose index will reveal liver damage in late biliary obstruction, the other two tests being of no value in this respect. Either the gold reaction or the galactose index may be used to follow the course of a hepatitis, and will often give positive results for some weeks or months after the disappearance of clinical or latent jaundice. In cirrhosis and in subacute hepatitis all three tests have been positive, and the galactose index appeared to have some correlation with clinical severity, so far as could be judged from this small series (13 cases).

3. *Jaundice of Unknown Origin.*—Haemolytic jaundice is usually diagnosed by clinical and haematological methods, and will not be considered here. The way in which these tests can help in the more difficult task of distinguishing obstructive from toxic and

infective jaundice is indicated in Table V, which shows the typical or average results in the types most commonly encountered.

TABLE V.—*"Typical" Results with 3 Tests in Jaundiced Patients*

	Gold	Phosphatase	Galactose Index
Obstructive	Negative	Over 35	Frequently normal
Infective hepatitis	Positive	Under 25	Raised
Cirrhosis and subacute hepatitis	Positive	Raised	Raised
Arsenical	44% pos.	Under 25	Raised
Weil's disease	42% pos.	?	?

The interpretation of the results in these cases must always depend partly upon clinical data, and can never be completely rule of thumb. Nevertheless there are many instances in which a slight acquaintance with the history permits an almost certain diagnosis on the basis of the tests. Considering the gold and phosphatase tests first, three particular combinations appear to have diagnostic significance: (A) A negative gold reaction with phosphatase above 35 units suggests biliary obstruction. (B) A positive gold reaction with phosphatase below 25 suggests parenchymatous hepatic disease and absence of biliary obstruction. (C) A strongly positive gold reaction (4 or 5+) has not been seen in obstructive jaundice and appears to be diagnostic with any phosphatase level. In such cases a phosphatase above 35 suggests cirrhosis rather than acute hepatitis.

It will be evident from Table V that the chances of making the distinction are greater in infective hepatitis and cirrhosis than they are in arsenical jaundice and Weil's disease, but fortunately the two latter conditions do not usually present great diagnostic difficulties. When the gold reaction is positive possible complicating diseases must be considered, but these rarely cause serious trouble in interpretation.

The constancy of these findings is illustrated in Table VI, which includes all jaundiced patients on whom both tests were done. It will be seen that out of these 100 cases 75 fall into group A, B, or C (columns 1, 3, and 4), and in all of these the findings were in keeping with the final diagnosis. The galactose test was confirmatory in 26, omitted in 41, and atypical in 8. The atypical galactose tests were 4 cases of biliary obstruction with secondary liver damage and the 4 cases of infective hepatitis in young adults referred to above.

TABLE VI.—*Combination of Two Tests in 100 Jaundiced Patients*

	1	2	3	4	Totals
Gold .. .. .. Phosphatase	Negative Over 35	Negative Under 35	Positive[4] Over 25	Positive Under 25	
Obstructive jaundice[1]	22	9	1 (1+)	0	32
Infective hepatitis ..	0	7	1 (5+)	28	36
Cirrhosis and subacute hepatitis[2]	0	0	4 (All 5+)	6	10
Arsenical jaundice ..	0	6	1 (5+)	12	19
Toxic jaundice[3] ..	0	2	0	1	3
Totals	22	24	7	47	100

[1] Due to pancreatic carcinoma in 14, gall-stones in 9, hepatic metastases in 6, and other causes in 3. Diagnosis established by necropsy in 15, laparotomy in 15, and by other methods in 2.
[2] Diagnosis established by necropsy in 5 cases, biopsy in 2, and clinically in 3.
[3] Due to T.N.T. in 2 cases and to sulphapyridine in 1.
[4] Figures in brackets indicate strength of gold reaction.

In the remaining 25 cases (column 2 and one case in column 3) the results did not always give a definite answer, but in some instances the galactose test provided further information. They may be classified as follows: (1) Three cases of obstructive jaundice with negative gold reactions and phosphatases of 16, 25, and 29, and galactose indices of 118, 126, and 114 respectively. In view of the ages of the patients—72, 62, and 40—the normal galactose tests here were felt to be strongly in favour of what proved to be the correct diagnosis. (2) A group of 22 cases with negative or weakly positive gold reactions in which the findings were conflicting and of little diagnostic value. These consist mainly of obstructive and arsenical jaundice, but include some cases of infective hepatitis and toxic jaundice. The galactose test was omitted in 18 of these, and in some it would probably have helped. In two of the obstructive cases a later repetition of the tests showed a rise of the phosphatase to a diagnostic level.

The final assessment of the three tests in these 100 jaundiced patients is therefore that the distinction between biliary obstruction and generalized liver disease could be made in at least 78, which include about the same proportion of the obstructive and of the non-obstructive cases. It is not, of course, suggested that these rules of interpretation will be infallible, but since no exception to them has been observed in this series they appear to be reliable enough to form a useful diagnostic guide.

As a matter of practical convenience it is easier to do the gold and phosphatase tests first, and to reserve the galactose for cases in which the first two are atypical or in which the degree of liver damage is of interest. The galactose index has, however, a special place in the investigation of hyperthyroidism.

Summary

The clinical value of laboratory tests in the diagnosis of liver disease has been reviewed with special reference to the serum colloidal gold reaction (319 cases), the serum alkaline phosphatase (136 cases), and the galactose index (145 cases).

The first two tests, taken together, often give valuable diagnostic information when considered in conjunction with clinical data. A jaundiced patient with a negative gold reaction and a phosphatase above 35 King-Armstrong units probably has biliary obstruction; one with a positive gold reaction and a phosphatase below 25 units probably has not. A 4 or 5+ gold reaction is against biliary obstruction whatever the phosphatase level.

The galactose index is useful as a confirmatory test in special cases and for assessing the degree of liver damage when present. It is also of value in the diagnosis of hyperthyroidism.

The results given indicate that out of 100 jaundiced patients the distinction between biliary obstruction and generalized liver-disease could be made in 75 cases with the gold and phosphatase tests, and in a still higher proportion if the galactose index was included.

I am much indebted to the medical staff of the Staines County Hospital and of Sector 7 for permission to investigate their patients, and to Prof. A. D. Gardner, Dr. E. N. Allott, Dr. A. J. Amor, Major J. Marshall, and the Middlesex County Medical Society for various sera.

APPENDIX

Table for Blood Galactose Method of Maclagan (1940)

Ml. of 0·002 N sodium thiosulphate (blank minus unknown)

	0·0	0·05	0·10	0·15	0·20	0·25	0·30	0·35	0·40	0·45
	Mg. of galactose per 100 ml. of blood									
0·0	0	10	17	21	24	27	29	33	35	37
0·5	40	43	46	48	51	54	57	59	62	65
1·0	67	70	72	75	78	80	83	85	88	90
1·5	94	97	99	101	104	107	110	112	115	118
2·0	121	124	127	130	132	135	138	140	143	146
2·5	149	151	154	156	159	162	165	167	170	173
3·0	176	178	181	183	185	187	190	192	194	196
3·5	199	201	203	205	208	210	212	215	217	219

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ARTIFICIAL RESPIRATION

THE NEED FOR A GREATLY INCREASED RATE IN ASPHYXIA

BY

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The rate in all methods and teachings of artificial respiration varies between 12 and 18 times a minute. This rate has persisted to the present time, unaltered and unchallenged for all conditions and requirements. The purpose of this article is simply to demonstrate the obvious error or oversight in the application *of all methods* of artificial respiration *to cases of asphyxia* without at the same time considering the greatly increased respiratory requirements existing in asphyxia and making some attempt to meet these requirements. (The word "asphyxia" is used throughout as being synonymous with "suffocation" and "cyanosis.")

All cases for which artificial respiration is required may be considered to fall into two main groups:—Group 1: cases *without asphyxia*—e.g., under anaesthesia, from electric shock, etc.; Group 2: cases *with asphyxia*—e.g., *suffocation* from drowning, from lack of air (buried in bomb debris), from smoke, gases, etc. Any Group 1 case, if untreated, quickly becomes a Group 2 case.

Artificial respiration done at the usual rate of 15 times a minute is adequate and excellent for Group 1 cases, as the respiratory requirements are approximately the same as in natural respiration at rest; *but the same rate is quite inadequate to deal satisfactorily with Group 2 cases of asphyxia,* in which the respiratory requirements are very much greater. The body not only provides a natural respiration at rest—namely, a tidal breath every four seconds—but also provides it for all normal degrees of exercise and asphyxia whenever they arise in daily life. This natural respiration in asphyxia makes use not only of tidal but also of full complementary breathing at whatever increased rate may be required to deal with existing needs.

The truth of these statements can very easily be demonstrated by simply holding the breath *as long as possible* and then, on the resumption of breathing, noting the volume and rate of the very necessary respirations. It will be found that slow tidal breathing is most inadequate, *if not frankly impossible*—and this from a very mild degree of asphyxia. Now consider the deeply asphyxiated person. He must certainly have *far greater respiratory requirements,* for he has passed more milestones along the road to death; he has lost consciousness, his respiratory centre has ceased to function—only his heart clings stubbornly, though precariously, to life. He is metaphorically shouting aloud for air—and is in actual fact dying for want of it. Obviously his respiratory requirements cannot be adequately met by a tidal breath once in four seconds. Yet that is the manner in which it is being administered to-day to the deeply asphyxiated.

On the truth of these simple and obvious facts, which have never before been applied practically to this vital need, I base my claim for the necessity for providing increased respiration in asphyxia. This increase can be obtained only by raising the volume or the rate. It may be assumed that each method of artificial respiration at present in use provides the greatest exchange of air possible by that method, so that only by increasing the rate can any greatly increased respiration be obtained. Fortunately, the rate can be raised in all methods with little effort, with no loss in efficiency, and with *great increase* of the total respiratory exchanges.

It is convenient and correct to consider the increasing depths of asphyxia as being of three degrees: Degree 1, up to loss of consciousness; Degree 2, up to cessation of respiration; Degree 3, up to final heart failure. It should be realized that it is only in Degree 1 that actual experiments on the state of asphyxia can be carried out, for the deeper degrees of asphyxia occur only accidentally and not under circumstances suitable for experimenting; while it is not practicable that any such asphyxia should be produced "artificially by force" for experimental purposes. It is, however, quite practicable to produce varying depths of Degree 1 asphyxia at will, and without danger, by simply holding the breath for varying lengths of time. It is from experiments in such self-administered asphyxia that we are obliged to gain our knowledge of the manner in which asphyxia may be relieved by varying amounts and rates of respiration.

Experiments in Asphyxia

Each experiment is done in the sitting position, and is started by taking a full, free complementary breath (without forcing inspiration to the utmost) and holding the breath for various stated periods. At least five minutes of natural respiration at rest is enforced before each experiment.

In these recorded experiments a subject has been chosen with sufficient determination to hold his breath for long periods, and of sufficient integrity to report the times at which "the pulse commences to be heard" on holding the breath, and, on resuming respiration, the times at which "the pulse ceases to be heard" and the "acute discomfort ceases." This latter somewhat arbitrary time is that at which one no longer has to "fight for more air," though deep rapid breathing may continue for some minutes.

The tidal respiration used in Series 2 has been judged by the subject to the best of his ability. It is quite feasible for the subject (by conscious control) to breathe an approximately similar amount to the tidal at any time or rate required. That this amount should be exactly the tidal is, of course, unlikely, but any respiratory experiment on the conscious subject is open to error of the "human element," and in these, even though the results were affected thereby very considerably, the same fundamental conclusions could and would be drawn.

Series 1 experiments (see Table) shows results of varying degrees of asphyxia on the natural *uncontrolled respiration.* As the asphyxia becomes deeper, though the respiratory exchanges are greater the recovery is slower. Asphyxia from only two minutes' stoppage of respiration (Experiment 3) causes the volume of each respiration to be increased at least twice, and the rate to be increased four times. Thus the total volume of air exchanged naturally after only a moderate Degree 1 asphyxia is *at least eight times* the total volume exchanged naturally at rest for the same unit of time. (The total volume exchanged by any artificial method at present is seldom much greater than the total volume exchanged naturally at rest.)

Series 2 experiments show the effect on a constant degree of asphyxia obtained by altering only the rate—the volume remaining tidal throughout. Exp. 5 shows that the rate of 1 in 4 seconds provides insufficient respiratory exchange to relieve this particular

Experiments in Asphyxia

	Experiment No.	Time Breath held (Seconds)	Ear Pulse heard (Seconds)	Type of Respiration used	Rate of Respiration	Ear Pulse ceased (Seconds)	Time taken to be Free of Discomfort (Seconds)	Remarks
Series 1	1 ..	60		Natural	6 in 10 secs.		8	Tidal plus complementary breathing used naturally without control. Volume of each respiration increased to full in Exp. 1, with marked increase in rate also. Rate further increased to as fast as possible in Exp. 4
	2 ..	90		,,	9 ,, 10 ,,		10	
	3 ..	120	20	,,	12 ,, 12 ,,	8	14	
	4 ..	150	50	,,	30 ,, 20 ,,	15	20	
Series 2	5 ..	120	20	Controlled tidal	1 in 4 secs.	Constant	Discomfort increased	Very difficult; asphyxia growing worse all the time. By great effort experiment continued for 40 secs., when will-power dulled and natural respiration reasserted itself
	6 ..	120	20	,,	1 ,, 2 ,,	45	*c.* 60	Relief definite but very slow
	7 ..	120	20	,,	1 ,, 1 sec.	15	*c.* 30	Relief much improved over Exp. 6
	8 ..	120	20	Forced rapid tidal	2 ,, 1 ,,	10	15	Practically as good relief as in Exp. 3
	9 ..	60		Controlled tidal	1 in 4 secs.		*c.* 60	Relief definite but very slow

degree of asphyxia, and the experiment had to be broken off because of increasing asphyxia. Exp. 6 shows that by increasing the rate to 1 in 2 seconds the relief is definite but very slow. Exp. 7 shows that by increasing the rate to 1 in 1 second the relief is much improved. Exp. 8 shows that by further increasing the rate to 2 in 1 second (in the same manner as a dog pants) the relief is almost as good as by natural breathing in Exp. 3. (This rate of 2 in 1 second is not practicable artificially, but it shows that there is no effective limit to the practical increase in rate.) Exp. 9 shows that tidal breathing 1 in 4 seconds may relieve a very mild asphyxia, but fails to relieve a deeper asphyxia (compare Exp. 5).

Conclusions from Experiments in Degree 1 Asphyxia

1. The deeper the asphyxia the greater the respiratory requirement.

2. In any asphyxia that needs artificial respiration the respiratory requirement must be *greatly in excess of eight times* the normal resting requirement.

3. In the deeper degrees of asphyxia a greater respiratory exchange than in the lesser degrees is required to give an appreciable relief.

4. The total volume of air exchanged in a given time largely determines the extent of relief from asphyxia.

5. The faster the rate of tidal respiration the greater the relief from asphyxia.

Discussion

The above conclusions are undoubtedly true in Degree 1 asphyxia. The respiratory requirements of Degree 3 are essentially the same in quality as in Degree 1, and vary only in quantity. Degree 3 asphyxia should therefore respond to increased respiratory exchange in much the same manner as does Degree 1—*provided the circulation is adequate to take up and distribute the extra oxygen made available.*

The circulation, which remains fairly constant in Degree 1, becomes gradually more and more enfeebled and inadequate throughout Degree 3. It must therefore be fully realized that in Degree 3 asphyxia the *state of the circulation may play as great a part* in determining the extent of relief from asphyxia as the respiratory exchanges do. They are very closely interrelated. The circulation is now directly dependent on the respiration. The only possible way to improve the circulation is to ensure that a fully adequate supply of oxygen is available in the lungs, to be transported to the needy cardiac muscle. In brief, in a hypothetical case, if the circulation is still fairly adequate (the radial pulse being discernible) the recovery obviously must be much quickened by using a greatly increased rate. If, however, owing to long asphyxia, the heart is failing fast and the circulation is hopelessly inadequate, so that a tidal breath once in four seconds already provides more oxygen than can be taken up by the greatly depleted pulmonary circulation, there is nothing to be gained by increasing the respirations, as the patient would seem to be doomed, whatever may be done. It is, however, in the border-line case, in which the circulation is able to take up all the oxygen available at the usual rate and still be wanting more, that the greatest benefit will result from an increased rate. For in this case of deep asphyxia with failing circulation the tidal breath once in four seconds is inadequate to clear up the deep existing cyanosis and to maintain in addition the heart and body requirements (as shown by Exp. 5). Such cases have no doubt provided most of the recorded failures. By increasing the rate, and providing about four times as much air, not only do we give the patient a "much better chance," but it is not unreasonable to assume that some such cases, previously "on the down grade" at the usual rate, would revive with the increased rate. It must further be borne in mind that the blood in such a case is almost completely devoid of oxygen, and therefore can take up far more of it, volume for volume, than the blood in Degree 1, which can take up eight times the normal amount very readily. Thus, even though the flow of blood through the lungs may be very poor indeed, it is quite possible that all the oxygen available from tidal breaths every four seconds may be fully taken up by this deeply cyanotic blood, which then is left "hungering" for more oxygen. Therefore, it is essential to provide *all the respiratory exchanges possible* if *every* case is to have its best chance of recovery. It may, at least, confidently be stated that an increased rate can do no harm in any case, and must in many instances do much good.

It has been shown (Exp. 8) that the effectiveness of increasing the rate of tidal breathing continues beyond any practicable limit—provided the circulation is adequate; and as any hopelessly inadequate circulation cannot be recognized on examination, the only safe rule to adopt in all cases is to employ as fast a rate as may be efficiently possible.

It is not essential to discuss the relative parts played in asphyxia by the diminishing oxygen supply and the increasing carbon dioxide, or the varying effects of asphyxia on the different nerve cells or its effect on the cardiac muscle All such considerations are of little importance from the practical point of view, because *all manifestations of asphyxia, of whatever nature or degree, are the direct result of respiratory failure, and can only be improved by providing adequate respiratory exchanges.*

The Rate Suggested

In every method the present rate is slow. Four seconds is a long time when applied to one respiratory cycle. Indeed, in most methods it has been necessary to include a pause of one to two seconds in each cycle in order to keep the rate down to the so-called normal. In Schäfer's the interval is at the end of inspiration; in Eve's it is at the end of expiration. There has been considerable discussion as to the proper place in the cycle for this interval and the proper timing. My only comment is to draw attention to the undoubted fact that in natural respiration for even *mild* degrees of asphyxia there is *no time for a pause at all at any period,* inspiration and expiration being as quick as possible, and following each other as rapidly as possible. In all artificial methods the same manner of respiration should be provided.

In Schäfer's method it is difficult to occupy fully even three seconds with the actual movements necessary for one cycle. It is, in fact, much easier, and just as effective, to do all the movements in two seconds instead of three. The second so saved could be utilized, along with the second previously set aside for an interval, by providing the two seconds necessary for another cycle. Thus the rate may be doubled, without any undue effort at all, by merely substituting an easier rate of 30 times a minute. Now, in the interest of the dying patient some real physical effort should be made, and under most conditions this rate of 30 times a minute can be doubled. It is not difficult to do Schäfer's method at a rate of 60 times a minute without any loss of volume per respiration. Under few circumstances, with an adult operator, should it be necessary to let the rate drop very much below 60.

Silvester's method, because of the nature of the movements necessary, takes more time to perform than Schäfer's, and a rate of about 45 times a minute would seem to be the efficient maximum. My limited experience of Eve's method does not permit me to suggest the most suitable rate, but the same rule holds true—"as fast as possible consistent with no sacrifice in volume"—and I have little doubt that the efficient rate of rocking could be at least doubled, and probably much further increased.

Considering the number of cases of asphyxia occurring on land and sea under war conditions, the early adoption of this principle, and its teaching to all appropriate personnel, cannot be too strongly urged.

Conclusion

The respiratory requirements are so great in all cases of asphyxia which require artificial respiration that, in such cases, the adoption in all methods of as fast a rate as possible, consistent with efficiency, must result in the quicker resuscitation of the patient, thereby enhancing the chances of life.

Holler (*Die Chemie*, 1944, **57**, 14; *Dtsch. Gesell. inn. Med.*, Oct., 1943) classifies the causes of liver damage on a clinical basis as follows: (1) Endocrine disturbances: hyperthyroidism, diabetes mellitus, pregnancy. (2) Chemical poisons: phosphorus, arsenic, hypnotics, etc. (3) Food toxins as in "meat poisoning." (4) Spirochaetal diseases: Weil's disease, marsh fever, secondary syphilis. (5) Drugs: atophan, salvarsan, evipan, *Filix mas.* (6) Infections: jaundice in pneumonia, sepsis, rheumatism, diphtheria, scarlet fever, epidemic meningitis, etc. (7) Infections with monocytic or monolymphocytic reaction (Pfeiffer's glandular fever, epidemic hepatitis). Holler regards as specially characteristic of epidemic hepatitis the appearance of numerous monocytes in the blood; this he interprets as "a mobilization" of the reticular endothelial system.

PSYCHIATRY IN DETENTION

BY

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The report of the Oliver Committee, recently published, has drawn the attention of the public to the detention system used in the armed Forces, with special emphasis on the medical arrangements. In civil life the association of mental abnormality with delinquency is notoriously close, and it is not surprising that a similar association is discovered among Service offenders. It was thought to be of interest, therefore, to discuss the scope of psychiatry in detention establishments and briefly to describe the various types of abnormality which may be encountered there. Owing to the necessity for economy in medical manpower, it is impossible for us to copy the American practice of appointing a whole-time psychiatrist to each of the larger detention establishments; accordingly, it is incumbent upon the medical officer himself to utilize to the full such opportunities for psychiatric investigation as come his way.

Diagnosis

A small proportion of the offenders received in Naval detention quarters have already been reported on by the psychiatrist at their depot before sentence, and yet others have earlier psychiatric reports included among their medical documents; but the majority, coming as they do from isolated ships and bases, have not previously been assessed from the psychiatric angle. The field, then, is large and the time all too short for undertaking a thorough investigation of every case. A compromise must be reached, and it is our custom here to interview each offender alone as soon as possible after admission (often on the same day) and to discover as rapidly as possible the salient facts relating to his health, previous Service record, early environment, school and work histories, and hereditary influences. These facts are recorded on a special form and filed for reference. It is possible in this way to gain a general impression of the mentality of each offender in less than a quarter of an hour; and though it is of course impossible to form a correct opinion in every case, there is still the whole sentence in which to review hasty and ill-judged conclusions. Nowhere in the Service is the medical officer in a better position to observe his charges, and though the atmosphere is an artificial one, it is certainly less artificial than that of a hospital ward: he can watch the men through the whole of each day's routine, at drill and physical training, at school instruction, at industrial work, and even engaged in such necessary tasks as washing clothes or peeling potatoes. In cases of difficulty or doubt he can confer with the instructors and officers, and more especially with the chaplain, who has his own records and is in touch with the home environment of the offender in many cases. Where it appears that we are dealing with an abnormal case, however, a more extended examination is necessary, and further interviews or even a period under observation in the sick-bay may be called for. The results obtained by these various methods are utilized in two ways: directly, to advise regarding the immediate treatment of any particular individual and modification of the detention routine if deemed necessary; and indirectly, in bringing him to the notice of his depot psychiatrist shortly before the expiration of his sentence. In grossly abnormal cases, however, direct and immediate discharge to hospital for invaliding or specialized treatment is our invariable rule.

Treatment

The uncomplicated and regular life, hard exercise in the open air, generous hours for sleep, and the deprivation of alcohol and tobacco, all combine to improve the general physical condition of the average offender during his sentence, and, incidentally, to soothe and resolve the conflicts in his mind. Ocular demonstration is forthcoming in all but a small group of psychopaths, and the medical officer can observe how, in a few weeks, the sullen and resentful new arrival changes into a more placid and more co-operative individual. In the abnormal cases this process is generally obvious, and all that is required of the M.O. is a little moral support for the weak, reassurance and sedatives for the anxious in their earlier stages, and a certain allowance, tempered with firmness, for the idiosyncrasies of the psychopathic personality. The scope of psychotherapy in detention is strictly limited; for the medical officer is essentially an official in the eyes of the offender, just another link in the chain of Naval discipline. A similar disadvantage in the case of the prison medical officer was remarked upon by the Departmental Committee on Persistent Offenders in 1932. Moreover, the ordinary medical officer has other duties to perform, and even the time of the offender is limited; for so finely is his day adjusted for him that a long treatment session might deprive him of a bath or school instruction or necessary exercise. We have on occasion used narco-analysis to clear up periods of amnesia and other gross hysterical phenomena, but as a rule no advanced treatment is attempted. East and Hubert (1939) draw attention to the abuses which may creep in when the offender realizes that psychotherapy has possibilities for extorting concessions from the authorities in civil prisons; and the average Naval offender would not be slow to realize also that attendance for regular treatment is "a good wicket," and infinitely better than drilling or doing manual tasks. It is preferable to carry over those who can wait for the treatment of psychiatrists in depot; and those cases that cannot wait are transferred, as already stated, to hospital.

Results of 1,000 Investigations

The following is a brief outline of the findings in 1,000 cases admitted to this establishment for the first time. Of these 773 appeared to be well adjusted to life in general and a Service environment in particular; their offences were occasionally due to pressure of external circumstances, but the great majority were due to causes well within the control of the individual. As a rule these men had gone into delinquency with their eyes open, took their punishment as a matter of course, and went back to duty afterwards duly deterred for the future. On the other hand, 227 were found to be suffering from conditions as set out in the following table:

Organic cerebral causes	3	Mental defectives	6
Epilepsy	5	Mentally retarded	59
Schizophrenia	2	Anxiety-hysteria	31
Schizoid personality	15	Alcoholism	13
Depression	1	Homosexuality	3
Cycloid personality	2	Psychopathic personality	87

44 cases in the abnormal group gave a family history of epilepsy—a percentage for the group of 19.4; similarly, 46 (5.9%) of the normal group gave a similar history.

44 (19.4%) of the abnormal cases gave a family history of psychosis, severe neurosis, or certifiable mental deficiency; 54 (6.9%) of the normal cases gave similar histories.

83 (36.6%) of the abnormal cases admitted to at least one conviction before a civil court on a serious charge and 131 (16.9%) of the normal group made similar admissions.

It is significant that nearly all the thousand cases in this series came from large towns, especially Glasgow, London, Liverpool, and Tyneside; that the majority were of low general intelligence and education, and had had no hobby, study, sport, or intellectual interest before they joined the Service. They included a large proportion of unskilled workers, and were almost all from the non-technical branches of the Navy. It is thus evident that education and mechanical ability are strong factors in preventing delinquency in Service personnel.

The Abnormal Groups

Organic Cerebral Causes.—No final decision was reached about the 3 cases in this category. Two had strong presumptive evidence of severe head injuries in civil life, and the third was an ex-sparring partner who had been knocked out a number of times in boxing booths. All three were liable to become excited and confused on small doses of alcohol, but otherwise there was little connexion between their disabilities and their offences.

Epilepsy.—These 5 cases, of idiopathic type, were sent to hospital for invaliding. All five had suppressed their history when before a National Service Board. It is unlikely that their epilepsy bore any relation to their offences, which were all for absence without leave. Only one was seen to have a fit while under sentence.

Schizophrenia.—Only 2 incipient cases of this disorder were seen. One expressed the hope, in an apologetic manner, that he would not be mistaken for a German, and complained that others had been rapping messages about him on the walls; this was on the day of admission, and no further abnormalities were discovered during the rest of his sentence. On discharge he was referred to his depot psychiatrist for observation, and subsequently developed further delusions and was removed to hospital. The other patient drew attention to himself by acting strangely in detention, hiding under his bed, laughing at punishment, and appearing faintly amused at everything; he was sent to hospital, and was subsequently invalided as a schizophrenic.

Schizoid Personality.—These offenders were all above the average in intelligence, said they had never made friends, preferred their own company, and could not get on in the Service because of their inability to live at close quarters with large numbers of other men. They all admitted to over-indulgence in fantasy, and rather enjoyed the solitude of their cells, where they were free from interruption.

Depression.—Only one case of pure depression was seen—of a reactive type. It appears that this man's offence was directly related to his mental state, and he was discharged to hospital. He left hospital much improved, and continued under the care of his depot psychiatrist.

Cycloid Personality.—The swing of mood was abnormally evident in both these cases and justified their position under this category. These people are apt either to cause trouble through disregard of all orders when elated or to wander off and remain absent when depressed. Neither case approached a certifiable degree of abnormality.

Mental Deficiency.—This has become very rare in the Services since the introduction of routine intelligence tests, but occasionally a case appears in detention, having joined before the tests came into operation. Curran and Guttmann (1943) draw attention to the low standard of intelligence required for the performance of useful manual work in the Navy, and it is remarkable that men with mental ages of 8 or 9 frequently get along very well doing simple tasks and lead quite happy lives. On the other hand, others have been called up and have reacted to a strange and perhaps unfriendly environment by persistently deserting. Such cases are invalided as soon as they are spotted, but in a vast organization it is not surprising that an occasional defective goes unnoticed for some time. The following case is an example.

Case 1.—Stoker aged 25. Came from a good home, but was always afraid of animals and loud noises; he never got beyond Standard IV at school, and only owed this advancement to his age: while his fellows were at lessons he used to be told off to dig the garden. He then got a job in a small factory near his home, and performed a very simple task for nine years to the satisfaction of his employers. Called up early in the war, he went to sea in a destroyer, where he was terrified because of the noise of the engines; he was unable to learn the intricacies of his new duties. He then began to absent himself on every possible occasion, and served three short sentences in a civil prison. On admission here he stated that his sister was in an epileptic colony and that an aunt had committed suicide. He complained of pain in the back of the head of a "thumping" character, was afraid of being in a cell, and longed to get home; it appears that his wife looked after him like a child. He had never had a fit, but had had one short loss of memory. His M.A. was 7. He was immediately discharged to hospital for invaliding.

Mental Retardation.—This is often accompanied by other abnormalities, such as anxiety-hysteria and psychopathic personality, but all cases of backwardness encountered in this series are shown as such. Their mental ages varied from 8 to 11, though the higher figures predominated. These men came from families in which certifiable deficiency was not uncommon, never got beyond the lowest standards at school, and then drifted from job to job until they were able to find employment which did not require intelligent thought. In the Service they find instruction hard to follow, soon lose interest, waste their pay, and as often as not drink and smoke more than is good for them; many are habitual leave-breakers—more often from lack of imagination than wilful disobedience. Placed under strict supervision on discharge, they generally produce good work of a simple nature, and invaliding is only very rarely recommended.

Anxiety-hysteria.—In common with other recent writers I make no attempt to discriminate the two conditions; nearly all in this series showed both anxiety and hysterical symptoms. The Naval aspects of anxiety states and hysteria have been most thoroughly dealt with by others, and it is not proposed to discuss them further here. Acute cases of anxiety are very rare in detention, though chronic cases are not uncommon. A certain type of offender is ashamed of his fears, and fights shy of the medical officer both before and after his offence; unless he shows objective signs of anxiety, he is liable to escape detection until he appears in detention. Of hysterical manifestations, the fugue has the greatest possibilities from the point of view of delinquency, but such cases have generally received psychiatric investigation before sentence. I have dealt with hysterical reactions to punishment elsewhere. Typical mixed states are apt to be deceptive, but the following is an example:

Case 2.—A.B. aged 24. Complained on admission of "weakness, faintness, pains in the neck and chest, and a lump in the throat." He stated that a brother and a cousin were "nervous," and that he himself had had nocturnal enuresis until the age of 10. He never got beyond Standard V at school, but then worked fairly steadily for five years in a linen-mill and on a farm. After some months of unemployment he joined the Navy, about a year before the war. He got along well enough at first, but after the start of hostilities began to have strange feelings in his chest, and, when the medical officer could find nothing wrong, presumed that he had some unknown disease. He felt so unwell and inadequate that he twice absented himself from duty. On examination he showed objective evidence of anxiety, had a classical hysterical cough, but revealed no other sign of disease. He was put to bed on sedatives, and an attempt was made to investigate his condition; but he rapidly became more distressed in this environment and was discharged to hospital for invaliding.

Chronic Alcoholism.—The 13 men placed in this group had minor disorders which might have justified their inclusion in other categories, but their offences were directly due to their heavy drinking, and their behaviour when free from its influence was normal enough. Under punishment they proved amenable to discipline, and it was clear that if kept at sea, where there is no alcohol except the daily tot of rum, they would give excellent service. On shore leave, however, they were liable to degenerate into insubordinate, quarrelsome, and violent ruffians; more than one was prepared to steal to satisfy his craving. Two appeared to be typical though mild cases of dipsomania. A large proportion of the 1,000 patients claimed that their offences were brought about by alcohol, which they seemed to consider absolved them from all blame; but only the 13 quoted here satisfied one that drink was the primary factor. To add point to the necessity for placing these men beyond the immediate reach of temptation on discharge, one man seen in detention (not included in this series) had been under certificate in a mental hospital before entry, and reference to his records showed that this was directly due to chronic alcoholism.

Homosexuality.—Surprisingly few cases of this were seen, though the possibility was always remembered. All 3 had been investigated elsewhere, had most unsatisfactory personalities on other counts, and one at least had had a breakdown for a long period before the war. They were all discharged from the Service at the conclusion of their sentences, so that medical disposal was not required.

Psychopathy.—This term is unpopular with many authorities, but, restricted to the use defined below, I think that it is justifiable. It is necessary to have some generic term for that large mass of offenders who are markedly abnormal and yet cannot be included under other categories; the term "mentally inefficient" does not appear adequate, as their mentalities are efficient enough when necessary, and some verge on the brilliant within narrow limits. They all show one marked feature in common—emotional instability; it pervades their whole lives. They quarrel with their parents, wives, school-mates, fellow workers, and employers; they shift about from job to job, always hoping for something more congenial, less arduous, and more remunerative. "I can never settle to anything for long" and "I could not get interested in my work" are common remarks from these people. They often throw themselves out of work, remain unemployed for long periods, or wander about the country in an aimless fashion. They certainly do not lack

courage. In the Navy, they resent all discipline, shirk all responsibility, and squander their pay in a reckless fashion. A typical reaction was that of a rating who deserted to pay out his wife for some petty quarrel: "I knew she would lose her money while I was adrift," he said. They are drawn from all classes of society, and some of them have ruined excellent opportunities in early life by refusing to stick to anything. Many have been in approved schools, Borstal, or prison—some in all three; a few of them are habitual criminals, having taken to crime as a livelihood; but the majority have not enough stability even for that. It is not surprising that these men, more especially those of the aggressive type, appear in detention again and again, for violence, insubordination, and absence without leave. Under the transient stress of active service they tend to show up surprisingly well. It is not contended that crime is due to some strange disease, of which the psychopathic personality is one aspect: that conception has been abandoned by modern criminologists. On the other hand, it is significant that a very large proportion of civil and Service delinquency appears in those who have pronounced emotional instability. Such cases do not require hospital treatment or invaliding, and I have little faith in psychotherapy in these conditions. No satisfactory solution has been evolved in this country to deal with grossly psychopathic offenders, though special institutions for treating them were included among the measures in the Criminal Justice Bill of 1938. So far as Service delinquents are concerned, an attitude of understanding firmness, combined with careful placing on discharge from detention, is all that can be attempted at the present moment. The American system of heating the punitive furnace seven times for the psychopath does not appear attractive; but, in any case, the American Forces have the advantage over us of accepting no ex-criminals for enlistment. Many and interesting cases might be quoted from our experiences with psychopaths, but the following is an example of the problem which confronts us:

Case 3.—Stoker aged 45. Came from a poor home, but had no family history of crime or mental disorder. He came under the notice of the police at an early age and spent six years in an approved school. Later, he alternated for many years between the Army (which he entered three times, being three times discharged as incorrigible), the building trade (where he rose to be a foreman), and prison. He claimed to have spent ten years all told in prison, sometimes for burglary and once for robbery with violence. His face still showed the marks of razor-wounds received in racecourse gang-fights. At the outbreak of war he volunteered for the Navy without considering what that might entail; he soon found the life too arduous, and, without ever setting foot on a ship, disappeared. Three times he repeated this conduct, giving trivial and absurd excuses on each occasion. On examination he was the typical "old lag"—cheerful, plausible, and apparently friendly. His attitude while under sentence varied from a fawning subservience to truculence and open hostility. His general educational level was fair and his intelligence average. His disposal might have caused a serious problem, but he was found to have a high blood pressure, a trace of albumin in his urine, and his retinal vessels showed arteriosclerotic changes. At the conclusion of his sentence he was invalided on account of hyperpiesis.

Comparison with Civil Delinquents

It is hard to find an exact parallel between Service and civil delinquents, as so much Service "crime" is of a purely technical nature. A man may have no wish to be considered abnormal, and yet fail to see the necessity for returning when his leave is up or for staying awake on watch. Civil crimes are usually those of commission, Service offences of omission.

	Civil Prisoners	Service Offenders
Family history of epilepsy	4·8%	10·0%
Family history of insanity, neurosis, or mental deficiency	10·9%	9·6%
Psychosis	7·5%	0·2%
Defective	3·3%	0·6%
Backward	14·1%	5·9%
Epileptics	5·5%	0·5%

The only comparable set of figures with which I am acquainted is that of East (1942) in his investigation of 4,000 young delinquents at Wormwood Scrubs; his cases varied in age between 16 and 20. The present series deals with a rather higher age group, varying between the extremes of 17 and 46, though the average age was 23½.

With regard to the above comparison, it must be remembered that civil prisons must take all comers, whereas the armed Forces impose a considerable degree of selection on their intake. It will be seen, however, that the same kind of psychiatric investigation is required, whether in a civil or Service environment, when dealing with gross or repeated forms of delinquency.

Summary

The possibilities of psychiatric investigation and treatment of delinquents in Service detention establishments are discussed. It is suggested that the role of the ordinary medical officer is that of diagnosis, leaving treatment to be carried out elsewhere after discharge from detention.

It is shown that of a series of 1,000 Naval offenders who were briefly investigated 22.7% proved to be mentally abnormal.

The various types of abnormality seen in detention are briefly described, with a suggestion as to the bearing that those abnormalities have in promoting offences. A comparison between civil and Service delinquency is added.

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PROTEOLYSED BEEF IN THE TREATMENT OF COELIAC DISEASE

BY

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The importance of a diet rich in protein is well recognized in the treatment of coeliac disease and related conditions characterized by chronic jejuno-ileal insufficiency. The period of maximum incidence of coeliac disease is between the first and third years. The protein requirements per unit of body weight at this time of life are approximately twice that of an adult, while the ability to digest protein foods in infancy has an upper limit proportionately lower than in the adult. In coeliac disease gross impairment of the powers of absorption of the products of digestion, relating particularly to those of fat and protein, is superadded to the requirements and limitations already mentioned. These considerations, together with the apparent failure of any previous form of treatment to effect improvement in one of the cases reported, suggested to one of us (A. C. A.) the possibility of ensuring a high protein intake by the oral administration of proteolysed beef. The suggestion was therefore adopted, with encouraging results.

Our purpose is to present this method of treating coeliac disease. It should be made clear from the beginning that this line of therapy is based on the desideratum of a high protein diet in coeliac disease, and is on no account to be regarded as a substitute for or a replacement of the other accepted general principles of the treatment at present adopted for this condition; nor is it claimed that the striking progress observed in one of the two cases reported was brought about by this particular form of treatment. It is recognized that the natural history of coeliac disease could itself account for the improvement that took place, and that the part played by skilful nursing, a low-fat diet, and a high vitamin intake was no doubt important in determining this improvement. The method is therefore put forward on the grounds of having a rational and scientific basis and possessing distinct advantages over other methods of ensuring a high protein intake in the treatment of this disease. Finally, it is hoped these advantages, together with the freedom from technical difficulties in the preparation of proteolysed beef, will be considered of sufficient merit to promote further and more extensive clinical trials.

Method of Preparation of Proteolysed Beef

The method used for the preparation of the material is a modification of that described for the proteolysis of liver by Davis *et al.* (1943). Six pounds of minced lean beef are placed in a steam-pan together with 15 g. of papain and 100 oz. of water. The mixture is heated to 60° C. and maintained at this temperature for three hours. The material is then raised to 100° C. and vigorously boiled for 10 minutes. The hot digested mixture is strained through cloth, cooled in a refrigerator, strained to remove residual fat, and the volume adjusted to 6 pints with water. The resulting clear solution is stored in a refrigerator, and one pint for each patient issued to the ward daily.

Advantages of Proteolysed Beef

(1) Proteolysed beef yields in concentrated solution first-class protein in the form of easily digested and assimilable peptones, polypeptides, and amino-acids. (2) The digest is free from indigestible and particulate matter such as fibrous tissue. (3) Being reduced to a small volume (20 oz.), the equivalent of 1 lb. of beef a day can be taken by a young child over an indefinite period, whereas the use of a similar quantity of predigested beef would not be feasible. (4) Proteolysed beef is not unpleasant to the taste, and resembles broth; but what is more important is that it is taken readily and sometimes eagerly by young children. (5) The absence of serious technical difficulties renders the routine preparation of the digest a practical proposition in any hospital possessing a well-equipped dispensary.

Method of Administration of Proteolysed Beef

The digest keeps satisfactorily for 5 days if stored in a refrigerator. This allows of not too frequent preparation as well as of keeping a ready supply in the ward. Being in liquid form and of the consistency of broth, proteolysed beef is most conveniently given to young children as a 5-oz. drink, to be taken with the main meals and in the mid-morning or at afternoon tea. It may be given hot or cold; on the whole the former is preferred by the patients. Although to give four cups of soup of doubtful brew sounds a wearisome gastronomic routine—as it would be to most adults—this does not appear to be the case with young children. Both the patients whose cases are reported took the digest readily from the beginning, and rarely refused feeds, even after nearly 12 months' continuous administration. During exacerbations, when abdominal distension and vomiting were pronounced, the feeds were sometimes refused. It has usually been found, however, that when for any reason the digest was refused other forms of nourishment were likewise rejected. During all except the most severe intercurrent illnesses the feeds were continued. A number of other children in comparable age groups and suffering from different complaints were given the digest for short periods without difficulty.

Feeding with proteolysed beef contrasted most favourably with a 9-weeks period during which bananas were given to the older patient. The "banana course" was concluded a week before the proteolysed-beef therapy was begun, and was, by comparison, a dismal failure. The patient showed a dislike for bananas from the beginning, however cunningly they were prepared or camouflaged; she had to be watched while she ate them, and even with this precaution managed on occasion to secrete them under the pillow or among the bedclothes. In short, no detectable benefit accrued from the feeding with bananas in this case, while much inconvenience was caused to both patient and nursing staff. In regard to difficulties or disadvantages in the administration of proteolysed beef there is nothing to be said, for none were encountered, even after nearly 12 months.

Report of Two Cases

Case 1.—A girl aged 3½ years was admitted to Southend General Hospital on June 10, 1942. She had been healthy and robust until her second year, when the passage of frequent and offensive frothy motions associated with abdominal distension and progressive loss of weight set in. Deterioration in her condition had been steadily progressive, so that on admission she weighed only 18 lb. 13 oz., whereas at the age of 18 months her weight was 24 lb.

Examination revealed a typical picture of advanced coeliac disease; marasmus extreme; eyes sunken and dehydration marked. The abdomen was only moderately distended, but, together with a relatively normal face, contrasted sharply with a wasted, shrunken, and under-developed body. The stools, not more than three in 24 hours, were fluid, yellow, and offensive. Dehydration was overcome by rectal glucose-saline, while the standard treatment* was gradually introduced towards the end of the second week. During this period her weight increased by 3 lb., chiefly owing to fluid retention; for a nutritional type of oedema developed in the lower extremities. *Blood count:* Hb 82%; C.I. 0.88; W.B.C. 16,000, with a normal differential count. Progress remained slow and uncertain, a gain in weight one week being offset by a loss the next. Large offensive stools averaged three in 24 hours, while bouts of vomiting, with gross abdominal distension and much flatulence, occurred every few days.

Nov. 11, 1942: Ascites developed for no apparent reason. Weight 23 lb. 8 oz. *Nov. 19:* Developed lobar pneumonia, successfully treated by chemotherapy. Ascites subsided spontaneously during this illness. *Nov. 23:* Weight 17 lb. 4 oz. *Dec. 3:* Otitis media, with purulent discharge from left ear. Hb 67%; C.I. 0.8; W.B.C. 7,850, with normal differential count. *Jan. 1, 1943:* Critically ill for two weeks with dysentery. Weight 23 lb. 8 oz. *B. sonnei* cultured repeatedly from stools until *March 1.* Weight 20 lb. *March 19:* Developed tetany, with carpo-pedal spasm and much pain; relieved by calcium gluconate intravenously, but persisted in latent form for one week. Blood calcium 6.3 mg. per 100 c.cm. Radiographs showed gross generalized rarefaction of bone. Weight 22 lb. 8 oz. *April 1:* Bananas added to diet (three daily) for 9 weeks; taken only with difficulty and persuasion. Bowel actions two per 24 hours, but vomiting became more frequent during this period. *May 5:* Neohepatex 4 c.cm. intramuscularly weekly for 10 doses. *June 22:* Bananas discontinued. Weight 21 lb. 12 oz.

June 29 (Proteolysed-beef therapy begun): Weight 21 lb. *July 25:* Weight 20 lb. 4 oz. *Sept. 26:* Weight 21 lb. 3 oz. *Oct. 11:* Vitamin K 5 mg., D.O.C.A. 5 mg., riboflavin 1 mg., and nicotinic acid 50 mg., given intramuscularly daily for one month. Weight 20 lb. 5 oz. *Nov. 11:* Parenteral vitamins discontinued. Weight 21 lb. *Jan. 30, 1944:* Weight 21 lb. *Feb. 8:* Massage and bed exercises begun. Weight 23 lb. *March 1:* Able to sit in chair. *March 11:* Fell from chair, sustaining a subperiosteal fracture of right humerus. *March 14:* Developed alveolar abscess, treated by tooth extraction. Bowel actions 1 to 2 per 24 hours. Motions semi-solid and less offensive; vomited once in four weeks. Weight 27 lb. *April 17:* Able to walk with assistance. Weight 31 lb. 4 oz. *May 11:* Fell, sustaining subperiosteal fracture of right tibia. Bowel actions 1 to 2 per 24 hours. No vomiting for 7 weeks. *June 1:* The child, fresh-complexioned, looks healthy, and, apart from a distended abdomen, is normally proportioned, although considerably undersized for her years (5 years 5 months). She is precocious and cheerful, and in spite of deficient education is remarkably intelligent. Weight 35 lb. *Examination of faeces:* Total fat content, 29.7% of dried faeces, 6.6% being in neutral form and 23.1% split fat. *Blood count:* Hb 70%; R.B.C. 4,140,000; C.I. 0.8; W.B.C. 6,850, with normal differential count.

Case 2.—This patient, a boy aged 17 months, was admitted to Southend General Hospital on July 6, 1943. He had been a healthy infant until 6 weeks previously, when anorexia, with loss of weight, frequent bowel actions, and recurrent abdominal distension, made an appearance. Vomiting was not a feature.

On examination he was considerably wasted, especially about the buttocks and lower limbs; face pale and bloated; pot-bellied, with umbilicus everted. Weight 16 lb. 8 oz. *Blood count:* Hb 76%; C.I. 0.8; W.B.C. 7,500, with normal differential count. Blood calcium 9.8 mg. per 100 c.cm. Examination of dried faeces showed total fat content of 46.7%, 3.2% being in neutral form and 43.5% split fat. The standard treatment* was at once started, and 1 pint of beef digest included in the diet daily.

July 20: Bowel actions 3 per 24 hours; motions yellow, fluid, and offensive. Bouts of abdominal distension and vomiting occasional. *Aug. 8:* Bowel actions 2 per 24 hours. Weight 17 lb. 8 oz. *Sept. 20:* Weight 16 lb. 8 oz. *Oct. 20:* D.O.C.A. 5 mg., riboflavin 1 mg., and nicotinic acid 50 mg. given daily for one month intramuscularly. *Nov. 11:* Developed acute mastoiditis: treated by operation. Parenteral vitamins discontinued. *Dec. 20:* Weight 17 lb. 4 oz. *Jan. 1, 1944:* Weight 18 lb. *Feb. 8:* Massage and exercises begun; able to stand in cot. Weight 18 lb. 4 oz. *June 1:* Child shows marked improvement. He is lively, happy, and has a good colour. Although thin and undersized, he is by no means wasted. The abdomen is still prominent, but bowel actions have averaged 1 a day for over a month, while the motions are formed. Vomiting has ceased completely. Weight 22 lb. 4 oz. *Examination of dried faeces:* Total fat 31.3%, 5.8% being in neutral form and 25.5% split fat. *Blood count:* Hb 71%; R.B.C. 3,730,000; C.I. 0.9; W.B.C. 12,550, with normal differential count.

* This consisted of a graded fat-free diet with the addition of the following, which were given daily: vitamin D, 6,000 units; nicotinic acid amide, 100 mg.; ascorbic acid, 100 mg.; vitamin B_1, 6 mg.; iron sulphate, gr. 6; calcium lactate, gr. 30.

Summary

A method for ensuring a high protein nitrogen intake in the treatment of coeliac disease and allied conditions by the oral administration of proteolysed beef is described.

Details of the method of preparation of the digest, which can be satisfactorily carried out in any well-equipped hospital dispensary, are given.

Two cases of coeliac disease treated daily with proteolysed beef for 11 months and 10 months, respectively, are reported.

It is hoped that the new method, which is based on the principle of the need for a high protein diet in coeliac disease, will stimulate further clinical trials.

We wish to thank Dr. R. Sleigh Johnson, under whose care the patients were admitted to hospital, for permission to publish the case notes, and for his helpful criticism of this paper.

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A FRACTURE-DISLOCATION OF THE ANKLE OCCURRING IN FLYING ACCIDENTS

BY

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Fracture-dislocations of the talus, which before this war were comparatively rare injuries, have become more common as a result of accidents to Service aircraft. It is the intention to describe a typical fracture-dislocation of the ankle, occurring in such accidents, in which the talus bears the brunt of the injury, the manner in which it is produced, and the different kinds of treatment employed.

Description.—The fracture line is irregular and extends obliquely through the neck of the talus; the fragments are widely separated; the head of the talus remains *in situ*, but the body is expelled from the ankle-joint and is rotated around its longitudinal axis through 90° (Fig. 1). The injury is not compound. Whereas in posterior dislocations of the talus fracture of a malleolus is held to be an inevitable accompaniment, in this fracture-dislocation the same contention is not valid.

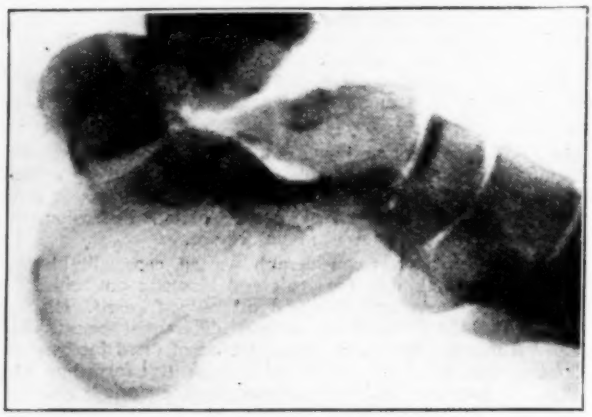

FIG. 1.—Showing the typical fracture-dislocation.

Manner of Production.—It is necessary here to mention a principle of airmanship: when a pilot in a single-engine aircraft is forced to make a crash-landing, before the moment of impact with the ground he puts on either the right or the left rudder. The purpose of this act is to minimize the danger from the engine, which will be dislodged backwards relatively when it strikes the ground. The turn so induced by the rudder increases the chances of the dislodged engine passing to one or other side of the pilot; but it also happens that the engine comes against the rudder-bar, which is pushed forward. The blow is severe enough to dorsiflex the foot beyond its limit and also to force it proximally so violently that the anterior margin of the lower articular surface of the tibia, which impinges against the neck of the talus, is driven through it; the ankle-joint is deranged and the body of the talus is dislocated posteriorly and rotated about its longitudinal axis.

Diagnosis.—This can be made with certainty only by radiographic examination; but with a knowledge of the history of the injury the provisional diagnosis of a fracture-dislocation of the talus is reasonable.

Treatment

Treatment is to be looked upon as urgent. The talus derives its nutrient vessels by way of the anterior ligament of the ankle-joint for the head and neck and by way of the posterior and lateral ligaments for the body. In this fracture-dislocation the blood supply to the body is cut off and avascular necrosis follows. This has a most important bearing upon treatment.

Reduction.—Closed reduction of the dislocated body, if at all feasible, is extremely difficult. Reduction, therefore, if attempted, should advisedly be open. The foot is then put up in plaster-of-Paris in extreme equinus for at least four weeks, when the sutures are removed, after which the plaster is continued for a further 16 weeks or more with the foot at a little less than a right angle. Care must be taken to ensure that separation of the fragments does not take place while this is being done. Although regeneration of the body after avascular necrosis might follow accurate reduction and prolonged immobilization, degeneration of its articular cartilage in the ankle-joint and in the subtaloid joint will occur, to produce a painful and crippling arthritis.

Partial Talectomy.—This is removal of the displaced body only (Fig. 2). To remove only the body of the talus is not advised. The head remains *in situ*; but the foot as a whole moves proximally, and the head of the talus comes to lie anteriorly to the lower end of the tibia. Backward displacement of the foot is prevented; there is no heel to speak of, and any dorsiflexion that the false joint permits is extremely limited. There is unnecessary painful friction between the anterior margin of the lower articular surface of the tibia and the fractured surface of the head of the talus. Nevertheless, the patient is able to walk several miles, and for a while even to dance after a fashion, with only a modicum of pain and disability. Arthritic pains develop and worsen with time. Shortening of the limb by about three-quarters of an inch, and stiffness, produce a marked limp. When the operation wound has healed, a surgical boot with a leg-iron must be worn to allow the deep tissues to consolidate. After 16 weeks the leg-iron is dispensed with, and surgical footwear which allows for the dropped malleoli and almost absent heel is fitted.

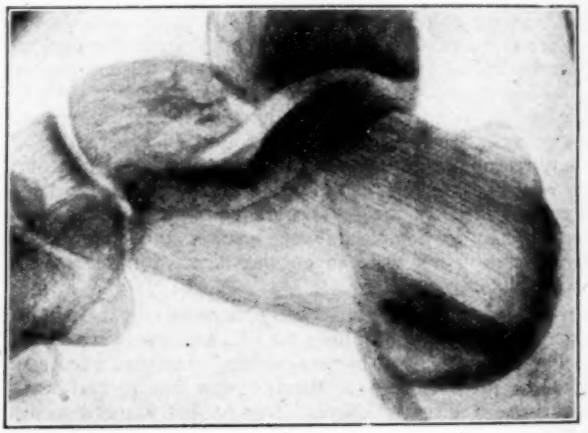

FIG. 2.—Showing the talus removed.

Talectomy.—If talectomy is the treatment of choice, a comparatively satisfactory result may be obtained if it is performed with the care and attention to detail which are exercised by Laming Evans. The depreciation of this operation is in large measure due to inadequate surgical technique, which can render the results of a badly performed talectomy irreparable. Again, surgical footwear is necessary to allow for the prominent heel; but much of the limp can be overcome by making the sole and heel about 1½ in. thick, and in conformity with the design of

Mr. C. Denley Clark's "rocker," as he described it in the *British Medical Journal* (1943, **2**, 364).

Fusion of Tibia and Os Calcaneus.—Wing Cmdr. W. D. Coltart, in a short paper which he read at the 1943 annual meeting of the British Orthopaedic Association, mentioned a second-stage operation—fusion of the tibia and the os calcaneus. This is still on trial.

Arthrodesis.—Where expert operative technique is available this should be the treatment of choice. It is needless to prolong treatment by employing reduction first. Arthrodesis should be the only operation. It is the surest way to stabilize the foot and to prevent an ever-worsening disability. It also obviates noticeable shortening of the limb, and to a great degree the limp, which can become almost imperceptible if the patient shortens his walking pace.

A SURVEY OF THE HAEMOGLOBIN LEVELS OF THE POOR CLASSES IN ABERDEEN

BY

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It was shown by Davidson, Fullerton, and Campbell (1935) that iron-deficiency anaemia was common among the poor classes in Aberdeen and that the anaemia was to a large extent caused by the ingestion of diets low in iron. Several somewhat similar surveys have been made recently with the object of determining what effect war conditions have had on the haemoglobin levels of different sections of the population (Davidson *et al.*, 1942, 1943; Mackay *et al.*, 1942). It was felt that it would be particularly useful to carry out such a survey in Aberdeen, since the results obtained in this city could be compared more fairly with the 1935 survey than figures obtained in other areas. Accordingly, the work here briefly reported was started early in 1943 and was completed early in 1944. Throughout the investigation Haldane haemoglobinometers which had been tested by the National Physical Laboratory were used, and the appropriate correction factors have been applied to all the results. The Haldane haemoglobinometers used in the 1935 survey were carefully standardized with the oxygen capacity method.

It soon became apparent that the investigation could not have exactly the same scope as that reported in 1935. Apparently the results of the pre-war survey have been admirably appreciated by the medical officers in charge of mother and child welfare and other clinics, so that it is now impossible at many centres to find a representative cross-section of the population which has not at some time had iron therapy. For this reason we have excluded infants from the present survey. A similar difficulty was encountered at antenatal clinics, where iron is freely dispensed to all women who are judged clinically to be anaemic. Therefore haemoglobin estimations have been restricted to women attending such clinics for the first time. Within the limitations imposed by these circumstances the results of the 1943 survey can be fairly compared with those of 1935, as the subjects belonged to the same social groups, with one exception which will be dealt with separately.

Results

To facilitate comparison most of the results are presented graphically in the accompanying Chart, and only a short description of the results in each age group is necessary.

Children of Nursery-school and School Age (2 to 11 years).—The average haemoglobin levels both in 1935 and in 1943 show in general a gradual rise with increasing age. The results in 1943 are distinctly higher than those of 1935 until the age of 7 years onwards, when the curves converge. Table I shows the percentage of subjects in each decimal range of haemoglobin level. The incidence of anaemia in pre-school children was much less in 1943 than in 1935, but it is rather surprising to find, among the school-children of the 1943 survey, several instances of mild anaemia, in contrast with its absence in 1935. It may be pointed out that the figures for 1935 are more significant than the small numbers of subjects indicate, since haemoglobin estimations were made at that time in an additional

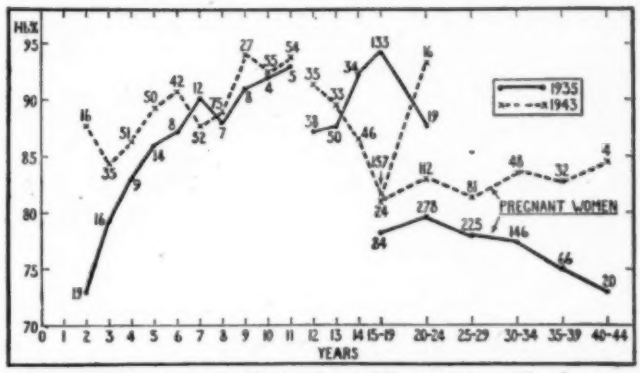

Chart showing average Hb levels at different ages. The figures represent the numbers of subjects examined.

group of 100 school-children. In only 2 of them was the haemoglobin level less than 80%, and in both it was greater than 70%. This group is not included in the graph or table, as the ages were not noted.

TABLE I.—*Incidence of Anaemia in Children*

Age (Years)	No.		Haemoglobin Range (%)														Av. Hb	
			40–49		50–59		60–69		70–79		80–89		90–99		100–109			
	1935	1943	1935	1943	1935	1943	1935	1943	1935	1943	1935	1943	1935	1943	1935	1943	1935	1943
2	19	16	5	—	11	—	11	—	32	—	42	63	—	37	—	—	73·0	87·9
3	16	35	—	—	—	—	12	—	19	6	56	63	12	31	—	—	79·4	84·5
4	9	51	—	—	—	—	—	—	33	8	44	72	12	20	12	—	83·1	86·3
5	14	50	—	—	—	—	—	2	7	8	64	46	29	44	—	—	86·0	89·4
6	8	42	—	—	—	—	—	—	—	5	75	45	25	41	—	10	87·4	90·8
7	12	52	—	—	—	—	—	—	—	6	35	46	58	44	17	4	90·2	87·8
8	7	75	—	—	—	—	—	—	—	5	71	37	29	55	—	1	88·0	89·0
9	8	27	—	—	—	—	—	—	—	—	38	22	50	70	12	7	91·4	93·9
10	4	55	—	—	—	—	—	—	—	2	25	29	50	69	25	—	92·0	92·2
11	5	54	—	—	—	—	—	—	—	5	20	19	60	82	20	—	93·0	93·9

Adolescent Girls (engaged in Industrial Work and attending a Social Club).—The Chart shows a curious discrepancy between the results of the two surveys. In 1935 the average haemoglobin level for the group aged 15 to 19 years was 94.4%, while in 1943 it was 81.3%. The numbers of subjects in these two groups are 133 and 157 respectively, so that the difference is a significant one. The incidence of mild anaemia (haemoglobin less than 80%) was considerably higher in 1943 than in 1935.

Adolescent and Adult Males (engaged in Industrial Work and attending a Social Club).—132 subjects in this group were examined in the 1943 survey; to avoid confusion they are omitted from the Chart. The results are similar to those found in 1935. The average haemoglobin level of the 15–19 years group was 94.1%, while in 1935 it was 98.8%. Significant degrees of anaemia were not found.

Pregnant Women (attending Antenatal Clinics).—The Chart shows that the average haemoglobin level for each age group was distinctly higher in 1943 than in 1935. Moreover, the decrease in the average levels with increase in age which was found in 1935 was absent in the present survey. The percentages of subjects in each decimal range of haemoglobin level are

TABLE II.—*Incidence of Anaemia in Pregnant Women*

	No.	Haemoglobin Range (%)								
		30–39	40–49	50–59	60–69	70–79	80–89	90–99	100–109	Average Hb
1935	819	0·5	1	4	12	32	38	12	0·5	78·1
1943	301	0	0	0·3	3·6	31·5	50·5	13·3	0·6	82·6

shown in Table II. In 1935 17.5% of the women examined had moderate anaemia (haemoglobin less than 70%) as compared with only 3.9% in 1943. This discrepancy cannot be attributed to any difference in the duration of pregnancy

between the two groups, since the percentages of subjects examined in each month of pregnancy were approximately the same in 1943 as in 1935. The degree of parity of the subjects in the 1943 survey was slightly less than in 1935, but it has been clearly shown by one of us that this cannot be correlated with the incidence of anaemia in women of the same age groups (Fullerton, 1936).

Nurses.—205 members of the nursing staff of Aberdeen Royal Infirmary were examined. Since a similar group was not included in the 1935 survey the results are presented separately in Table III.

TABLE III.—*Haemoglobin Levels of Nurses*

Age	No.	Average Hb
18–19	48	86·0
20–24	122	88·8
25–29	15	88·8
30+	20	91·7

No haemoglobin level less than 70% was found, and only 2 were less than 80%.

Discussion

It is not proposed to discuss in detail the possible implications of the results. The striking finding is the improvement which has occurred in the haemoglobin levels of young children and of pregnant women, and it may be deduced that a similar improvement would be found in non-pregnant women. No attempt has been made in the present survey to estimate the iron content of the diets taken by the different groups, but it seems possible that the greater iron content of the national bread may explain, at least in part, the higher haemoglobin levels found in 1943. We are unable to offer satisfactory explanation of the increased incidence of anaemia in girls between the ages of 15 and 19. It is possible that a detailed knowledge of the conditions of their work and its effect on appetite and menstrual loss might throw some light on the problem.

Summary

Haemoglobin estimations in 1,177 subjects belonging to the poor classes in Aberdeen have been compared with the results of a similar survey carried out in 1935. The incidence of anaemia in young children and in pregnant women was less in 1943 than in 1935, but it was greater in girls between the ages of 15 and 19. No significant difference was found in adolescent and adult males.

We are indebted to the Public Health Department of the City of Aberdeen and to St. Katharine's (Y.W.C.A.) Club for facilities that have made this survey possible, and to the Public Health Committee of the Aberdeen Town Council for financial assistance. We wish also to thank Prof. R. S. Aitken for his interest and help.

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Medical Memoranda

"Silent" Mastoiditis or Mastoiditis due to Str. mucosus capsulatus of Schottmüller

The following case stresses the importance of bearing in mind the incidence of this type of mastoiditis (called also atypical, asymptomatic, or primary, etc.), and of operating on the patient before he has developed intracranial complications, with a consequent poor prognosis.

CASE HISTORY

On Dec. 5, 1943, a woman aged 38, rather stout but well nourished and in good health, felt that her left ear was "blocked." At the same time she had mild intermittent pain in the left ear, especially at night. There were no other constitutional symptoms. After a week she went to see her doctor, mainly for the deafness and sense of "blockage" of the ear, which he syringed. After three hours she became sick and giddy, and this lasted for half an hour. The pain got worse and spread towards the back of the head. She had had no cold or sore throat preceding this, and no past history of ear trouble. There were still no constitutional symptoms.

On Jan. 28, 1944, she was seen at the out-patient department, where the only abnormal clinical finding was that the left tympanic membrane was pink. Radiographs of mastoids showed them to be of a very cellular type with definite blurring of the left cells, but no cavity or sequestrum could be observed. On Jan. 31 she was seen again, and was ordered inhalations and guttae acid. boric. c spirit. On Feb. 7 there was hardly any pain, and she thought she was relieved. On examination there was sagging of the external meatal wall and the drumhead could not be seen. The patient was admitted for observation against her wish, as she thought she was well enough to go home. She was under observation for a week, during which time there was no rise of temperature, pain, discharge, or constitutional disturbance.

On the night of Feb. 13 she developed severe pain again, and had some oedema and tenderness over the mastoid antrum. On the 14th the swelling was more pronounced. The temperature was never above 99° F. Blood count: total W.B.C., 8,400—polys 70%, lymphs 28%, hyalines 2%. The mastoid was opened on Feb. 15, and was found to be of a cellular type, full of pus and granulation tissue, with necrotic bone, and at the same time there was an extradural abscess. Culture of the pus revealed the organism to be pneumococcus Type III. She made an uneventful recovery and was discharged on March 23. Since then she has been in perfect health and has had no recurrent ear trouble.

I wish to express my thanks to Mr. T. P. Gill, honorary surgeon to the hospital, for encouragement to report this case.

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Accidental Haemorrhage in Two Successive Pregnancies within 16 Months

The case of a patient suffering from accidental haemorrhage in two successive pregnancies seems rare enough to merit publication.

CASE HISTORY

Mrs. X, aged 33, was admitted as an emergency case on Jan. 17, 1943. She had had two previous pregnancies and two miscarriages. The first pregnancy, in 1928, was normal, but labour was premature at 8 months, the child weighing 3 lb. This child is alive and well. The second pregnancy, in 1931, went to full time, but the child died of fits at 3 months. Then followed two early miscarriages. The patient did not become pregnant again for 12 years, and was then admitted here.

She was collapsed and pulseless on admission, with jaundiced pallor, blanched mucous membranes, and air hunger. There was gross oedema of hands, face, and legs; the urine was solid with albumin; and the blood pressure was 92/50. The uterus was the size of a 26-weeks pregnancy but should have been 34 weeks by dates (date of expected delivery, early March). It was typically tender and woody, and with no F.H. and no foetal parts. There was a very slight vaginal loss. A blood transfusion was started, the membranes ruptured, and a pad and binder applied. An injection of morphine gr. 1/4 had been given on admission. Spontaneous breech delivery occurred 6 hours later. The placenta was completely infarcted and ploughed up by a large retroplacental clot. There was no post-partum haemorrhage. The child was stillborn and weighed 2 lb. 14 oz. The puerperium was very satisfactory; the anaemia improved with large doses of iron, the blood pressure remained steady at 128/88, and the urine was albumin-free. Birth control advice was given.

In Jan., 1944, the patient, having failed to carry out the birth control advice given, was 3½ months pregnant. Her general condition was good; blood pressure and urine normal. She was advised to attend the clinic regularly. The date of expected delivery was June 4. She was admitted to hospital on May 9 with anaemia and mild toxaemia. The blood pressure was 140/90; there was slight oedema of feet, but no albuminuria. The treatment was absolute rest and large doses of iron.

On May 12 she suddenly collapsed in the antenatal ward with severe abdominal pain. She was cold, clammy, and restless, and the pulse was very poor. There was no vaginal loss. The blood pressure fell to 86/64. The uterus was tender and obviously enlarging with concealed haemorrhage. A continuous drip transfusion was started, morphine was given, and a vaginal examination made. The membranes were not bulging and there was absolutely no vaginal loss. However, it was deemed wiser to try to stimulate the uterus, so the membranes were ruptured and a pad and binder applied. The case seemed hopeless during the next few hours, as there were no pains and the uterus was enlarging rapidly; but, fortunately, contractions did start, and 9 hours after the membranes were ruptured a spontaneous breech delivery occurred. The placenta followed immediately, grossly infarcted with a large retroplacental clot, roughly 6 by 6 by 4 in., and about half a pint of old fluid blood. There was also a clot the size of a hen's egg between the foetal surface of the placenta and the cotyledons. The child was stillborn and weighed 3 lb.

Progress was slow but steady in the puerperium. The anaemia rapidly improved, the blood pressure remained at 118/76, the oedema subsided, and the urine remained clear. The patient was discharged feeling better than she had done for some time. She was advised very strongly to avoid further pregnancies.

Two accidental haemorrhages within 16 months must be a rare occurrence. The toxaemia was never pre-eclamptic in severity, the onset was sudden in each pregnancy, and residual symptoms, except for slight secondary anaemia, were non-existent.

NORA L. KEEVIL, M.D., M.R.C.O.G.

Reviews

VITAL STATISTICS IN THE TROPICS

Vital Statistics and Public Health Work in the Tropics. By P. Granville Edge. Foreword by Prof. Major Greenwood. D.Sc., F.R.C.P., F.R.S. (Pp. 188. 12s. 6d.) London: Baillière, Tindall and Cox. 1944.

Only by losing some of our tropical colonies for the time being have we been really awakened to their value to ourselves and to the world at large, and to our own shortcomings in past dealings with them. In his foreword to this book Prof. Greenwood reminds us that "there are colonial territories administered by us the vital bookkeeping of which is far cruder than that of the home country three hundred years ago." Major Edge is convinced from his own experiences that the urgently needed improvements in this sphere, essential as he shows them to be for efficient administration, will not be achieved by "slavish application of European procedures and practices to tropical areas where social organization and conditions of life are so vastly different." He approaches the special problems which these colonies present to vital statisticians, public health workers, and administrators, whose hearts are in the work, in a realistic and sympathetic way, and in successive chapters deals with census enumerations, birth and death registration, morbidity records, and nomenclatures of disease. In devising systems for building up a framework of even the elementary facts he stresses the need to take careful account of the peculiarities of each people as regards their attitudes, superstitions, taboos, and social customs, and provides many illustrations of the misleading conclusions which may otherwise result. An unfortunate error occurs on page 96, where it is stated that "the English registration system makes no provision for the registration of the age of mothers at the time of the birth of successive children, nor for recording the order of such births." The Population (Statistics) Act of 1938 remedied this defect, and such information has now been obtained at birth registration for more than six years. The book, which is well furnished with references to English publications, is likely to give both help and encouragement to those engaged in public health activities in tropical countries.

A SUMMARY OF MODERN PSYCHIATRY

Fundamentals of Psychiatry. By Edward A Strecker, M.D., Sc.D., F.A.C.P. (Pp. 192. 12s. 6d.) London: Medical Publications, Ltd.

As the author rightly says, the general physician must nowadays know about psychology, and if that is true of America it is equally true here. This little volume gives a concise, clear, and (in spite of what we call Americanisms) readable summary of modern psychiatry which the consultant and specialist in all branches may read with great advantage to himself and his patients. It is very suitable also for the general practitioner, though his need is less urgent. The author has a balanced view about his subject and on the whole steers clear of jargon, but lapses once when he talks about oral and anal types. The only criticism which might be advanced is that there is not enough about the psychoneuroses: only 12 pages compared with 21 on schizophrenia alone. The latter is a very interesting and important disease, but after all it is nothing like so common as the psychoneuroses, which throng the general wards and out-patient departments of all hospitals. In his approach to the psychoneuroses Dr. Strecker is obviously the institution psychiatrist and lays too much stress on the grosser physical manifestations of conversion hysteria and the acute angoisse attacks. He still talks about neurasthenia, while admitting that the fatigue is due to emotional conflict, and he perhaps stresses the reactive type of anxiety too much as compared with the true psychoneurotic anxiety arising from unconscious conflict.

The chapter on war psychiatry is based on the hearsay evidence of visitors from Britain on the effect of bombing on civilians, but there is nothing about the effect of evacuation on children. So far as Service psychiatry is concerned the author's remarks are based on his own experiences at Château Thierry in the last war. We are, however, probably too near the process to be able to estimate the effect of the present war on the psychic make-up of this generation, and we cannot yet be sure that the observations of the last war are applicable to present-day problems.

If all doctors who are not psychiatrists were to read and digest this book—and it would not take them long—their practice of medicine would be vastly improved.

WHOOPING-COUGH

Whooping Cough. By Joseph H. Lapin, M.D. (Pp. 238; illustrated. 25s.) Springfield and Baltimore: Charles C. Thomas: London: Baillière, Tindall and Cox. 1943.

As this disease is now the most dangerous of all the specific fevers a monograph on whooping-cough is very timely, and Dr. Joseph H. Lapin has skilfully analysed the literature to aid his own extensive experience in this disorder. He describes the epidemiological and bacteriological aspects before proceeding to the problems of immunity and the serological reactions. Chapters on clinical manifestations and on diagnosis give a clear picture of everyday problems, and next come sections on prevention and treatment in which, naturally, prominence is given to the use of vaccines. Non-specific treatment—on which there is so much literature that suspicions of its complete ineffectiveness are raised—is carefully considered. The treatment of complications and a section with suggestions for the administrative control of the disease complete the volume, which has a good index.

Prof. P. M. Stimson in a foreword describes this book as "a valuable contribution to the literature of the disease," and this can be heartily endorsed. At a time when modern chemotherapy and biological products have done so much to rob other specific fevers of their perils it is important that the unsolved problem of whooping-cough should receive serious attention. Dr. Lapin has performed an important service with his monograph, which can be warmly commended.

ASEPSIS IN EXCELSIS

Micrurgical and Germ-free Techniques. Their Application to Experimental Biology and Medicine. A Symposium. Edited by James A. Reyniers. (Pp. 274; illustrated. $5.00 or 27s. 6d.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1943.

This volume edited by J. A. Reyniers embodies papers read at a colloquium at the University of Notre Dame, Indiana, in 1939: the title *Micrurgical and Germ-free Methods* on the cover is varied on the title-page by substituting the word "techniques" for "methods." Neither version will convey to most readers what the book is about, and it should be explained that "micrurgy" is apparently more or less synonymous with micro-manipulation, while "germ-free methods" refers to the maintenance of animals and plants under bacterially sterile conditions. There are three chapters on the first of these subjects and five on the second, while three final chapters deal with another subject altogether, though admittedly related to the second—the control of cross-infection by air-conditioning, mechanical barriers, and ultra-violet light.

In this oddly heterogeneous collection of papers there is much of interest to the microbiologist, and something for those concerned with several other branches of science besides. Micro-manipulation makes it possible to inject materials into individual cells and watch the effects: some indications are given of the uses to which this remarkable method can be put. The most sensational achievement described in the book is the rearing of a germ-free monkey, whose portrait appears in two places, and the projected extension of such studies to goats and calves will call for elaborate machinery on an even larger scale. Animals so reared are of course delivered by Caesarean section, and are kept in "cages" having rather the appearance of horizontal autoclaves with windows, and apertures to which long-sleeved rubber gloves are fitted for interior manipulation: sterile air is supplied to them, and food is steam-sterilized in a "food-clave," the space between double doors communicating with the interior. The monkey which had been kept germ-free for four months at the time of writing had a more adventurous sister who contaminated herself with staphylococci and other organisms by puncturing a rubber glove, and eventually "fell into" a glove and was suffocated. Other chapters in this section deal with the germ-free cultivation of protozoa, nematodes, and insects, with the use of the mammalian foetus as an experimental animal, and with the germ-free cultivation of plants.

The whole book very properly deals with methods rather than results, but much is said about what they may be expected to achieve. While we must admire the enterprise of those who have perfected these exceedingly difficult techniques, it remains to be seen whether they will add to knowledge to an extent commensurate with the trouble and expense involved.

Notes on Books

Medical Photography: Radiographic and Clinical, by T. A. LONGMORE, is published by the Focal Press at 25s. This book has a twofold purpose. The first half is devoted to the photographic aspects of radiography, and the second to clinical photography in all its aspects. There is a wealth of information in both parts. In the radiographic section, clinical radiographic technique is by design omitted, and the radiographic student must turn elsewhere for instruction in the art of positioning the patient, but the photographic aspects are dealt with in a manner that merits commendation. The descriptions are simple and concise and the illustrations well chosen and informative. The section begins with an account of the production of the photographic image, and goes on to describe *x*-ray apparatus, accessories, and dark-room technique. It finishes with an excellent summary of faults in radiographs. The second section, on clinical photography, covers the field from the physics of optics to the completed print, and a final section deals with special techniques such as mass miniature radiography, tomography, colour reproduction, microphotography, and cinephotography. The book ends with an appendix of formulae and a glossary of terms. It is warmly to be recommended to all engaged in radiographic or clinical photographic work.

The fifth edition of a *Handbook of Ophthalmology*, by Mr. HUMPHREY NEAME and Mr. F. A. WILLIAMSON-NOBLE (J. and A. Churchill; 18s.), follows closely on the previous edition published in 1942, but it is not a mere reprint. The authors have taken the opportunity to incorporate the modifications in treatment produced by the sulphonamides, and have considerably revised the sections dealing with operative procedures. The newer work on vitamin therapy is also noted. The revision greatly enhances the value of this excellent handbook.

Preparations and Appliances

AN AURAL SYRINGE

Mr. LIONEL COLLEDGE, F.R.C.S., writes:

Dr. Lester Mead Hubby described in Nelson's *Loose Leaf Surgery of the Ear* an apparatus devised by Dr. E. P. Fowler to take the place of syringing by hand.

Mr. Percy Phelps (of the firm of Messrs. Mayer and Phelps) has designed a simpler apparatus in which the force of gravity is used to produce a stream of warm water at a pressure of approximately 11 lb. to the square inch, which corresponds to the power of a Wood's aural syringe when used efficiently by hand.

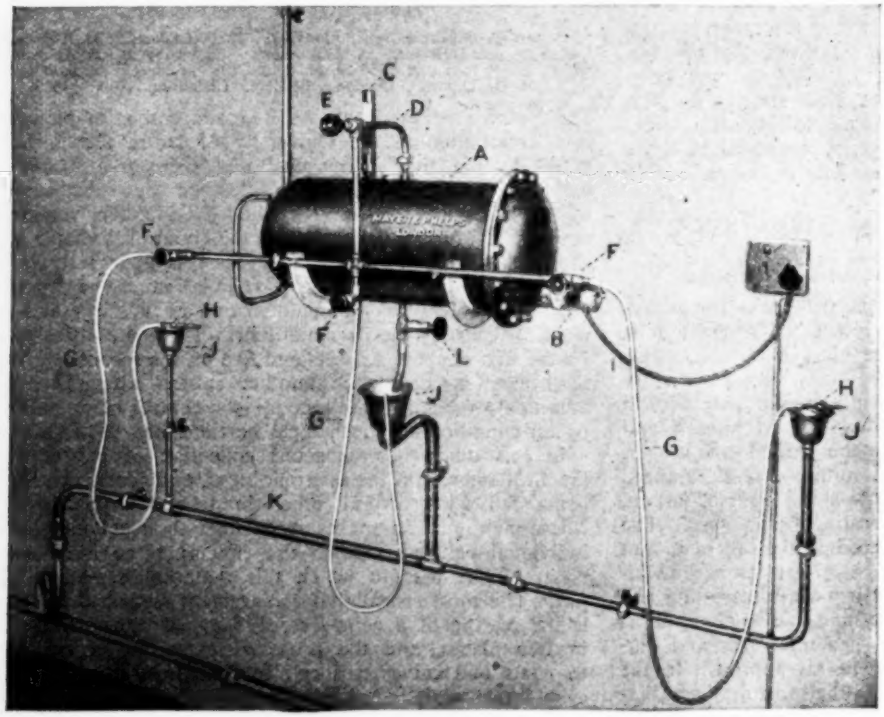

FIG. 1

The apparatus of Mr. Phelps consists of a tank (A) of 10 gallons capacity fitted at a convenient height on the wall, and connected to this tank is the feed water tank (M). This feed tank is placed at the height of 25 ft. above the main tank (A), at which height the pressure of water is maintained at approximately 11 lb. per square inch. Fitted to the main tank is an electric immersion heater (B), controlled by a thermostat which maintains the water in the tank at a constant temperature of 100° F., indicated by a thermometer (C). From the top of the tank a pipe (D), controlled by a valve (E), leads to three points (F), each point being controlled by a separate valve. To each point a length of flexible rubber tubing (G) is attached, ending with a nozzle (H) suitable for syringing the ear and easily controlled by one hand. Near each irrigating point a small receptacle (J) is fitted, connected to the waste pipe (K) to carry away waste water. A valve (L) is fitted to the tank in order to draw off water rapidly in case of need.

This apparatus has now been in use at the hospital in Golden Square for more than five years, and has proved safe, rapid, clean, and efficient. It reduces greatly the labour of syringing a long series of ears and thereby eliminates the fatigue which introduces an element of danger when such syringing is done by hand. One nurse can easily syringe fifty ears during an afternoon clinic; and, since the introduction of the apparatus, bleeding from minor injuries to the meatus and granulations has no longer occurred, nor has there been any case of perforation of the tympanic membrane, an accident which before then occasionally, though rarely, occurred. The total cost of making and installing the apparatus was less than £100, which has been more than repaid in these days of shortage of staff.

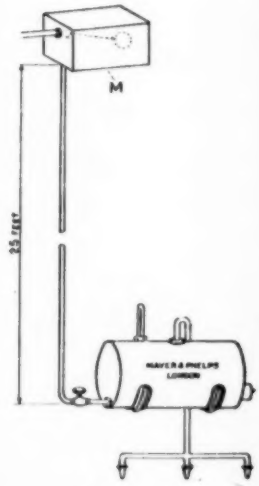

FIG. 2

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY SEPTEMBER 16 1944

YELLOW FEVER EPIDEMIOLOGY AND CONTROL

For many years the mosquito *Aëdes aegypti* was considered to be the only vector of yellow fever, and all attention was focused on it in attempts to eradicate the disease. Such indeed was the case in Panama and Cuba, and with the elimination of the mosquito the disease disappeared. Anti-*aegypti* measures have also kept the disease under control in urban communities in Africa and South America. The methods of *A. aegypti* control used in South America, which have recently been described by Soper *et al.*,[1] have, however, failed to prevent the spread of yellow fever in areas in which it is endemic in Africa, and in the regions in which jungle yellow fever is prevalent in South America, where no *A. aegypti* have been found. In Brazil, in 1938, Shannon and his co-workers[2] reported finding the virus in the mosquitoes *Aëdes leucocelaneus*, *Haemagogus capricorni*, and a species of sabethine caught in those forest regions where the disease was endemic. The disease chiefly affected the men working in the forest, the wives and children at home being relatively unaffected. The problem that was most difficult to understand was how and where the virus managed to exist during the dry season. It has been suggested that the infection was maintained in certain vertebrate hosts such as the monkey, many of which were said to have died in certain regions just before the occurrence of human cases; but, though 20% of the sera of monkeys in the endemic areas in both South America and Africa have been shown to contain yellow fever immune bodies, the exact part monkeys play in the maintenance of the disease has not been understood. Bugher and his colleagues,[3 4 5] who have been carrying out extensive immunity studies of the fauna in Colombia for a number of years, have recently been able to throw some light on the epidemiology of the jungle yellow fever in that country. They have found that *Haemagogus capricorni* caught in the tree-tops in the dry season are infected, and as the mosquito remains infected for life the virus can be carried over into the next breeding season at the beginning of the rains. Though virus was never isolated from them, common opossums, *Didelphis marsupialis*, trapped in the same region where infected *Haemagogus* were found developed immune bodies in their sera during the first 30 days of their captivity. Immune bodies were also found in some of the cebus monkeys caught in these regions. If small doses of virus are inoculated subcutaneously in the animals, there is an incubation period of 3 to 8 days. The virus then appears in the circulating blood for 3 to 7 days. During this time the animals appear quite well, and are, of course, permanently immune after infection. Bugher *et al.* conclude from these findings that jungle yellow fever in Eastern Colombia is primarily a disease of jungle animals, being transmitted from animal to animal by certain mosquitoes which are strictly forest inhabitants. Mahaffy and his colleagues[6] have also been able to clarify the position somewhat in Uganda by catching infected *Aëdes simpsoni* in the areas where they have recently isolated the virus from man for the first time.

The only means known at present of combating the jungle disease is by mass prophylactic vaccination, which is also combined with *aegypti* control in urban communities in epidemic and endemic areas. The vaccine used has gradually improved since the discovery of the virus in 1927. Though the French have continued to use neurotropic mouse-brain virus, all other interested countries have adopted the attenuated 17D strain of virus developed in the Rockefeller laboratories and grown in the chick embryo. The vaccine consists of infected embryo dried from the frozen state *in vacuo* in ampoules. Because of its instability unless kept at low temperatures it is distributed to special centres only. Since human serum was eliminated from the vaccine several years ago no cases of jaundice have been produced by serum-free vaccine. This vaccine has for the most part produced little or no reaction after inoculation, and a satisfactory vaccine produces demonstrable neutralizing antibodies in about 95% of inoculees from 2 weeks to a month after inoculation. Though antibodies usually cannot be demonstrated for at least 10 to 14 days after inoculation, a small amount of experimental evidence and field observations indicate that anyone bitten by an infected mosquito 7 days or more after a satisfactory vaccination will be protected or have a modified attack. Certain batches of vaccine which have been shown to have apparently adequate amounts of virus as measured by titration in mice have failed to produce satisfactory immunity in man. Alterations in antigenicity appeared to have taken place in some instances during a comparatively small number of passages in chick embryo. To obviate this danger most centres now make their vaccine by inoculating embryos with "seed-lots" of virus from a large batch of vaccine known to produce satisfactory immunity. Even so, it is desirable that each batch be tested for its ability to produce immune bodies in a small group before being issued. It has been found that if each individual receives 500 m.l.d. for mice, about 98% of those immune one month after inoculation still have immune bodies 4 years later. In fact Bugher has found that among over 600,000 persons vaccinated in Colombia there had been only one recognized case of yellow fever—this in a boy inoculated only 5 days before he became ill and when he was presumably already infected; 198 proved and 45 probable cases had been recognized among the non-vaccinated since vaccination began. Many of these cases occurred in known epidemic areas where over 90% of the population were vaccinated. Similar results have been achieved in many areas in Brazil, and the scarcity of cases in the vast numbers of

[1] Soper, F. L., Wilson, B., Lima, S., and Sá Antunes, W., *The Organization of Permanent Nation-wide Anti-Aëdes aegypti Measures in Brazil*, Rockefeller Foundation, New York, 1943.
[2] *Science*, 1938, **88**, 110.
[3] *Amer. J. trop. Med.*, 1940, **20**, 809.
[4] *Amer. J. Hyg.*, 1944, **39**, 16.
[5] Ibid., 1944, **39**, 58.
[6] *Trans. roy. Soc. trop. Med. Hyg.*, 1942, **36**, 9.

vaccinated personnel exposed since 1939 in endemic and epidemic regions of Africa is ample proof of the efficacy of the vaccine when it is properly handled. There are still numerous areas where *A. aegypti* may be found in countries linked to yellow fever endemic areas by air service. Though anti-*aegypti* control is exercised in the region of the aerodromes in most instances, it is necessary that individuals passing through an endemic yellow fever area and entering Egypt or India shall have been inoculated against yellow fever at least 10 days before entering that country.

SUBDURAL HAEMATOMA IN INFANCY

Chronic subdural haematomas have become commonplace in the past five years, and in the adult the picture of increasing headache, drowsiness, blurred vision, and confusion is well recognized. Not nearly so much is heard about the same condition in infants, although according to Ingraham and Matson[1] it is common during the first two years of life and the source of a high morbidity if it is neglected. These authors have presented a detailed analysis of their experience of nearly a hundred cases treated in one hospital, and comment upon "the existence of a much larger number of these damaged children than is generally realized, many of whom might be spared with proper treatment." Their paper makes it clear that this must indeed be so, although attention has already been drawn to the subject by several articles which have appeared in the last decade, and although Ingraham and Heyl[2] in an earlier paper noted that the frequency with which subdural haematomas are found in infancy is largely proportional to the intensity with which they are sought. An injury is usually the first cause, but it need not be severe. In about a third of the cases reported the injury had certainly occurred at birth, and in many more it probably had. Although this is so, a fracture of the skull is not often found, for the infant's skull will distort so greatly without bony injury. The injury that will cause subdural haematoma is of course associated with distortion of the cranium and its structures—distortion which results in tearing of the tributary veins that run into the superior longitudinal sinus, and so causes the bleeding which starts the abnormal process. It is for this reason that the haematoma is more often bilateral than not. The kind of injury inflicted to the head at birth is conducive to such tearing of veins. Nearly a half of the children in Ingraham and Matson's series had evidence of infection elsewhere in the body, usually in the respiratory tract, but this was simply the result of their poor general condition, for the prime cause of the illness had not been recognized early enough.

It is most important to appreciate that there is no clinical picture which is absolutely characteristic of subdural haematomas in infancy. It is even more unfortunate that the symptom pattern may be identical with that of many other slowly progressive conditions, for intracranial disease in childhood so often gives rise to such general symptoms as a raised temperature, vomiting, irritability, and failure to develop or gain weight. The commonest symptoms of a subdural haematoma in childhood are fits, vomiting, irritability, and those of an associated febrile illness. Fits and vomiting occur in over a half, and the fits are quite indistinguishable from those seen in other childish illnesses. The symptoms were present for less than a week before admission to hospital in a third of Ingraham and Matson's series of cases, but in another third they had persisted for over a month. The signs of the haematoma are an increase in muscular tone with increased reflexes, an irregular or raised temperature, and in a quarter of the cases a rather large head the shape of which is not that of hydrocephalus. There may be a cracked-pot note on percussing the skull, and bulging of the fontanelles. Optic atrophy or, very rarely, papilloedema may be seen. The authors say that the condition should always be suspected when an infant who has been through a difficult delivery fails to do well in the first month of life, is irritable, has an irregular temperature, and seems to have rather too large a head. Neither the laboratory nor the *x* rays help in diagnosis, which never becomes accidentally apparent to the casual examiner, but which can be established only by puncture of the subdural space. Fortunately this procedure is simple and certain, and can be carried out under a wheal of procaine. Ingraham has the infant well wrapped up and gives it a teat with a little glucose to suck. He inserts a fine, short lumbar puncture needle with a stylet into the middle of the frontal suture on each side, under rigid aseptic conditions. The technique is described in detail. When blood is found simple aspiration will not suffice, for the inelastic membrane which remains impedes the normal rapid growth of the infant's brain. It is, however, undesirable to remove the clot by immediate craniotomy, for the child is usually too ill. It is best to aspirate repeatedly until the symptoms have subsided, and when the child's condition has improved sufficiently a large osteoplastic flap can be turned and the clot be removed, capsule and all. The results seem to be excellent, for more than three-quarters of Ingraham and Matson's operated patients not only have remained free from symptoms but have shown normal behaviour and development for their age. It is distressing to consider how very easily a subdural haematoma can be missed in infants, for its effects are serious. Now that its existence has been verified in so many cases it should be recognized with increasing frequency.

[1] *J. Pediat.*, 1944, **24**, 1.
[2] *J. Amer. med. Ass.*, 1939, **112**, 198.

TESTS OF LIVER FUNCTION

There is a fascination about the measurement of human functions. Evidence of this is seen in the vast amount of work done on tests of human intelligence, cardiac efficiency, and renal and hepatic function. All this work is inspired by the belief that once we can measure a thing and express the result in figures we are at the beginning of science. This is true, however, only if we know just what we are measuring. We have perhaps arrived at that stage in intelligence testing, and have relatively simple tests that can be applied to individuals or groups by a well-trained technician. So far as concerns the kidney, the measurement of the clearances of inulin and diodrast allows us to make legitimate deductions about the rate of filtration through the glomeruli, the renal blood flow, and the work

of the tubules; at the same time, however, the tests have become too elaborate and time-consuming for routine use on patients. Neither of these stages has been reached in the measurement of hepatic function, but progress is being made on the road.

Different functions of the liver have in turn attracted attention. Twenty years ago interest was concentrated on the serum bilirubin, and this interest has now been revived by the technical developments associated with the names of Evelyn and Malloy and by the use of bilirubin excretion tests. Nevertheless, the hope that modifications of the van den Bergh reaction would be of value in the differentiation of different forms of liver disease has been generally abandoned.[1] Nowadays we pick our test of liver function according to the object we have in view. If we wish to control a particular hazard in industry or in therapy, as, for example, the risk of liver damage from arsenical treatment, the serial repetition of a single test such as the serum bilirubin or the hippuric acid synthesis may be adequate. In the differential diagnosis of a case of jaundice, and more particularly the decision whether it is due to obstruction in the outflow of bile or damage to the parenchyma, it is desirable to apply a battery of tests. In an article elsewhere in this *Journal* Maclagan recommends the colloidal gold and the phosphatase tests, followed if necessary by the galactose tolerance. Although experience with grouped tests in this country has shown the help they can give in diagnosis, their limitations must be realized. American workers have had an opportunity to use them on a large scale during the recent outbreak of hepatitis after yellow fever vaccine.[2] In many of the more protracted cases there was no evidence of disturbance of any function of the liver except the excretion of bile. Presumably the damaged cells had regenerated, but adequate connexions had not yet been re-established between the lobule and the portal tract. It would be misleading to call this condition obstructive jaundice in the ordinary sense. Finally, the clinician may wish to exclude hepatic disease in the investigation of ill-health, and Higgins and co-workers[3] have shown that chronic disease of the liver is unlikely to be present if the serum bilirubin and the plasma proteins are normal.

All this is empirical, and the clinical scientist will ask how the tests help him in understanding the morbid physiology of hepatic disease. To what extent are the different tests correlated together? Is a high phosphatase value due to the disturbance in the absorption of calcium because the bile is not flowing into the intestine, or is it due to a disturbance in the synthesis of glycogen, which occurs by a process of phosphorylation? Correlations of this kind have not yet been worked out, but we do appreciate the relation between the liver and the serum proteins. The serum proteins undergo quantitative and qualitative alteration when the liver is diseased, and the results are every bit as important as in nephritis. In chronic liver disease, notably cirrhosis of the liver, the serum albumin is generally reduced, whereas the serum globulin is normal or increased.[4] The degree of reduction in the level of serum albumin seems to be correlated with the prognosis as to the duration of life, with the clinical course of the disease, and with the appearance and disappearance of ascites. There is apparently a defect in the synthesis of serum albumin, and though these patients are able to absorb and retain protein they are unable to convert it into serum albumin. In acute hepatitis the change in the serum proteins is more of a qualitative than a quantitative nature, and it may be better demonstrated by one of the flocculation tests than by the simple chemical analysis of the serum proteins. There is a shift to the right in the protein pattern with an increase in the gamma globulin.[5] At present we do not understand why changes in the serum globulin occur in disease of the liver, though it seems as if the increase in the largest molecular weight protein, the gamma globulin, is an effort to compensate for the decrease in the smallest molecular weight protein, the albumin.

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[2] Turner, R. H., *et. al., Ann. intern. Med.*, 1944, **20**, 193.
[3] Higgins, G., *et al., British Medical Journal*, 1944, **1**, 211.
[4] Post, J., and Patek, A. J., *Bull. N.Y. Acad. Med.*, 1943, **19**, 815.
[5] Gray, S. J., and Barron, E. S. G., *J. clin. Invest.*, 1943, **22**, 191.

BIRTH UNDER HYPNOSIS

Hypnosis as a means of producing a state of relaxation in which minor operations can be performed has been described but has never become popular. It has been most used in dentistry, but only to a very limited extent. A recent paper from America on the use of hypnosis in childbirth may give added interest to a matter which is of both practical and theoretical importance. Kroger and deLee[6] report on twelve cases in which practically the whole of labour was carried out whilst the patient was rendered analgesic and trance-like. It seems that the dissociated condition lasted while forceps were applied. Episiotomy and perineal repair were undertaken, and though the report is not clear it seems that hypnosis was used in other cases in which labour was normal. When it was decided to use this method the gravida was placed in a hypnotic condition by the usual suggestive measures at fortnightly intervals from the sixth month onwards. In the course of these sessions deep hypnotic states were produced, and suggestions that the labour would be painless and convalescence normal were made. During labour itself the hypnotic state was produced shortly after onset, and was continued for as many hours as necessary, during which time the patients were able to micturate, defaecate, and bear down as in labour without any hypnosis. The hypnotist could arrange that the suggestions were equally effective if made by the house officer or nurse in charge. It is claimed that to dispense with medical hypnotics and anaesthetics is of much importance where complications such as heart disease or hypertension are encountered, and that in perfectly healthy women the absence of medicine is of benefit in the puerperium.

Why, it must be asked, is the practice not more widespread? Would not suggestions made under hypnosis during the latter months of pregnancy benefit many women frightened of childbirth? The efficiency of modern anaesthetics and hypnotics, and their rapid effects, obviously appeal more to obstetricians, who are still unable to state the exact moment when labour will begin. There is a vigorous conception that the healthy normal mother does not expect to be relieved of labour pains which she knows her friends and her ancestors have experienced and largely forgotten, and there is a sort of superstitious belief that the woman who really fears childbirth is a poor specimen, and that to experience such ordeals is a stimulus to character formation. But the obstetrician rightly fears labours more in the neurotically affected and in those with systemic disorders. If hypnosis does what Kroger and deLee claim, should it not be available for these patients?

The real difficulty is probably a practical one: hypnosis suddenly attempted in the maternity bed will be unlikely to succeed. It must be prepared for by preliminary sessions, and that means a regular time-table for the hypnotist and his availability when labour starts. Hence further trials will come from special gynaecological units to which psychiatrists with interest in the problems of hypnosis are attached. But the evidence that such collaboration between

[6] *Amer. J. Obstet. Gynec.*, 1943, **46**, 655.

the gynaecologist and the psychiatrist is overdue is daily apparent to both parties. The former is wanting to use the latter for many more purposes than to tell him when termination is justified on psychiatric grounds. Both are interested in the amenorrhoea which accompanies anorexia nervosa. Both are interested in the problems of functional dysmenorrhoea. Neither has solved the psychological problems of the menopause or its endocrine substratum: why is the menopause so physically and psychologically disturbing in some, so comparatively minor an event in others? Both psychiatrist and gynaecologist (as well as the sociologist and anthropologist) are interested in a fuller explanation of the food fads of pregnancy, the recurrent fears about mutilated, malformed, and defective children that the pregnant mother has, and about the reasons given for family limitations. When psychiatrists are more numerous and more trained in field work some of these problems may be tackled and suitable prophylaxis undertaken, as well as more use made of hypnosis as a substitute for anaesthetics and medication.

PENICILLIN IN BACTERIAL ENDOCARDITIS

With every new advance since prontosil in the chemotherapy of bacterial infections the question has soon been asked, Will this drug control subacute bacterial endocarditis? Of all streptococcal infections this is the most heart-rending and the most conducive to even desperate therapeutic adventures, for the patient is almost certain to die, and yet there remain weeks or even months for the fullest trial of any form of treatment which has even the faintest hope of success. The advent of penicillin has raised such hopes anew, and requests for supplies for the treatment of subacute bacterial endocarditis have been numerous. It should therefore be generally known that in fact the penicillin treatment of this disease has, on the whole, been disappointing; for this reason bacterial endocarditis was explicitly excluded from the list of conditions for which the present limited civilian supplies may be used. These will probably prove inadequate, until they are greatly augmented, for the treatment of all cases of life-endangering infections which are known to respond well to the drug. If the treatment of a case of bacterial endocarditis means that another patient with staphylococcal septicaemia has to go without it, it is clearly unjustifiable.

The published evidence is as follows. In the second series of miscellaneous cases treated at Oxford, described by Florey and Florey,[1] one patient with subacute bacterial endocarditis was assiduously treated for a whole month on several systems of dosage, including injections at intervals of only one hour, the total dosage being no less than 4,670,000 units. The blood was temporarily sterilized, but relapse with renewed bacteriaemia followed cessation of treatment, and the streptococcus responsible became penicillin-resistant. In the first large series of miscellaneous cases reported from the U.S.A.,[2] penicillin was given to 21 with subacute bacterial endocarditis: 4 patients died, no effect was obtained in 10, 3 improved temporarily, but 2 soon relapsed. Some of these patients probably received inadequate doses. In several later reports from the U.S.A. the findings are somewhat conflicting. W. E. Herrell[3] treated 4 cases, achieving only temporary improvement in all. M. H. Dawson and Gladys L. Hobby[4] treated 5, of which 2 were failures: 1 patient was improved, and 2 were alive and well thirteen and nine months later. The only really encouraging results are those of L. Loewe and his colleagues,[5] who treated 7 patients in all: 2 of these were atypical in that the organisms concerned were a pneumococcus and a haemolytic streptococcus, but the remaining 5 were examples of *Str. viridans* infection in valves damaged by previous rheumatic disease. After intensive sulphonamide treatment, which apparently failed, they were given penicillin in large doses—usually 200,000 units a day, with a total dosage of over 7 millions in 2 cases and 6 millions and 3 millions in 2 others, combined with 200 mg. of heparin daily. All these patients apparently recovered, but the interval which had elapsed at the time of writing was only two or three months in the majority. A brief statement of the present condition of these patients, now that a further eight months has elapsed, would be a useful contribution to our knowledge of this subject.

Even granting that penicillin may cure a substantial proportion of patients if used in this way, the treatment is a serious undertaking with a considerable risk of its own, and may use up enough of the drug to cure half a dozen other patients with almost equally dangerous, but more susceptible, infections. The subject clearly calls for more extended study on a research basis before a decision on its merits can be reached. Meanwhile only an improved supply position—such as we hope to see shortly—can justify the general release of penicillin for this purpose.

[1] *Lancet*, 1943, **1**, 387.
[2] *J. Amer. med. Ass.*, 1943, **122**, 1217.
[3] Ibid., 1944, **124**, 622.
[4] Ibid., 1944, **124**, 611.
[5] *J. Amer. med. Ass.*, 1944, **124**, 144.

AID FOR RETURNING G.P.s

In the *Supplement* to our issue of Aug. 19 there appeared a letter from a general practitioner who proposed that a fund of at least £100,000 should be raised to assist colleagues returning from the Services to re-establish themselves in practice. On reflection, it appeared to be unwise to start a new fund, designed to make, for general practitioners only, very much the same provision as is already made by the Medical War Relief Fund for the profession as a whole. The author of the letter, on being informed of the activities of this Fund, readily agreed that his suggestion was unnecessary, and asked that his donation of £100 might be paid into the Medical War Relief Fund. A similar request has been made by a woman practitioner, who, prompted by her colleague's letter, had sent a contribution of £50. There may be other doctors who are not well acquainted with the work of the Medical War Relief Fund. The honorary secretary of the Fund will gladly answer inquiries addressed to him at B.M.A. House, Tavistock Square, London, W.C.1. The Committee of the Fund would greatly appreciate the co-operation of members of the profession in making the Fund known to colleagues or dependants of colleagues who, though eligible for aid, may be unaware of the Fund's existence.

As announced in last week's *Supplement* (p. 56) the postponed Annual Representative Meeting, 1944, is to be held in London early in December, subject to the exigencies of the war situation. It will open at B.M.A. House on Tuesday, Dec. 5, at 2 p.m., and is expected to end on Friday, Dec. 8, though it will continue until the business is concluded. The Annual Conference of Local Medical and Panel Committees will open at B.M.A. House on Thursday, Nov. 2, at 10 a.m., and will continue if necessary on the following day.

FRACTURES OF THE CARPAL BONES

BY

H. A. HARRIS, M.A., M.D., D.Sc.

(Anatomy School, Cambridge)

The interesting analysis of "Fracture of the Carpal Scaphoid" by Robertson and Wilkins (1944) permits the mere anatomist to call attention to the need for still further sorting. In their series of 158 wrist-joint injuries in young adults, 100 cases of fractured scaphoid occurred. There is one enigma in their analysis, for, of 100 cases of fractured scaphoid, they state that 70 united but 72 resumed full duty. What was the nature of the full duty in the two who resumed with ununited fractures? This is important, for in most cases of ununited fracture of any bone of the carpus in man and domestic animals the end-result is a generalized osteo-arthritis of the wrist. Yet another omission in the analysis is the failure to ascertain with certainty how many of the remaining 58 cases of "sprain" of the wrist really had a fracture of some bone other than the scaphoid.

Fracture of the styloid process of the ulna often complicates Colles's fracture, and sometimes accompanies fracture of the scaphoid. It is, however, the flake fracture of the dorsum of the cuneiform (triquetrum) and os magnum (capitatum) which is so often missed radiographically. The fracture usually occurs during a fall, or recovery from a fall, with the wrist in full pronation and extreme flexion. The detached flake is torn off during extreme tension on the dorsal radio-carpal ligament, which runs downwards and medially from the radius to the dorsal surfaces of the scaphoid, lunate, and cuneiform bones. The deeper fibres of the ligament, on the ulnar side, run to the cuneiform bone and blend with the articular disk of the ulno-carpal joint. The flake fracture probably occurs more frequently in the cuneiform than in the os magnum. This flake fracture is easily missed on both antero-posterior and lateral radiographs. It is rendered visible only on that lateral view which places the area of maximal pain as near the periphery as possible (see Fig.).

Lateral radiograph showing flake fracture of the cuneiform (triquetrum) bone.

Another rare type of fracture is that of the pisiform bone. The fracture involves a flake on the distal tubercle, at the attachment of the piso-hamate and piso-metacarpal ligaments, which are often wrongly regarded as continuations of the tendon of the flexor carpi ulnaris.

Multiple injuries at the wrist are a common feature in falls by women laden with shopping baskets and in stokers and coal-miners who "catch a crab," such as a bolt-head or nut when using a shovel on a steel floor. One case showed this series of complications in a manner not to be forgotten. The patient had fallen while carrying a parcel in each hand. The first doctor recognized the obvious Colles's fracture, the surgeon at the hospital also saw the fractured styloid process of the ulna, his radiographer spotted the fractured scaphoid, and a certain anatomist discovered the flake fracture of the cuneiform. All were eventually very pleased with themselves, and the patient was put up in a magnificent plaster cast. Two days later he returned stating that the maximal pain was not in the wrist but in the chest. Two fractured ribs were recognized—but essentially by the patient. Thus, in any fall involving an injury to the wrist, not only must multiple fractures in the neighbourhood of the wrist be considered, but it is also worth while giving the patient's chest a gentle squeeze from front to back and from side to side—a manœuvre which uncovers a fractured rib much more rapidly than a radiograph.

A comparison of the wrist of man with that of a reptile, such as a crocodile, shows that in the lower forms the ulna is much stouter than the radius, whereas in the primates generally, and man in particular, the radius is much stouter at its distal extremity than is the ulna. The strength of construction of the hand in man is concentrated in the radius, thumb, and index and middle fingers. In the reptile the strength of construction is centred on the ulna and the third and fourth metacarpals. Conversely, however, the carpus in man has signally failed to respond to this change, and the narrow-waisted scaphoid is too delicately formed for the load which is thrown upon it, especially in radial abduction. Moreover, one radial carpal element, the os centrale, is missing in man, gorilla, and chimpanzee, thus further reducing the bony architecture of the radial side of the carpus. On the other hand, the reptilian carpus has a strong, solid, rod-like scaphoid. If one could transpose the reptilian scaphoid to the human hand the wrist might be rendered much more stable, but at the cost of those movements of adduction and abduction, as well as supination, so essential in cutting up food on the plate and transferring it to the mouth.

The scaphoid is the most irregular and variable of bones in the carpus, both from the point of view of comparative anatomy and from that of individual variation in man and the primates. The scaphoid may be absent, as reported by Botreau-Roussel (1922), or only partially developed, as in the case recently reported by Hodgson (1944). It is the most variable in the child as regards the time of appearance of the centre of ossification, and it may occasionally precede or more usually follow the appearance of ossification in the trapezium and trapezoid. Again, in the individual it varies considerably as regards dimensions in association with a heavy or a slender wrist, and it varies in particular in its proximo-distal thickness. It varies also as regards the development of the anterior tubercle and the posterior transverse ridge, and this in turn decides whether the waist of the bone is more or less marked. The anterior tubercle develops in proportion to the thickness of the anterior annular ligament (flexor retinaculum) of the wrist and the bulk of the short abductor pollicis muscle. The posterior transverse ridge varies essentially with the development of the radio-scaphoid and dorsal carpal ligaments, as these ligaments sometimes form a transverse gutter rather than a rough ridge on the bone, between the proximal articular surface for the radius and the distal surface for articulation with the trapezium and the trapezoid. One might almost say that there is a particular anthropological type in which fracture of the scaphoid is more apt to occur.

Fractures of all the other bones in the carpus are occasionally seen, but the frequency of flake fractures in the cuneiform and os magnum, and their omission in most modern textbooks, is such as to justify the application of a good comfortable plaster cast to any sprain of the wrist accompanied with pain on movement.

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Correspondence

Observation and Common Sense in the Student's Training

SIR,—Twenty-five years as a teacher—however inefficient—of medicine, and fifteen years as an examiner—however inadequate—should entitle one to presume, through this dual experience, a qualification to venture some observations upon the subject of Dr. Ff. Roberts's entertaining article (*B.M.J.*, Aug. 26).

I am whole-heartedly in agreement with Dr. Roberts's suspicion that there is something about the system of medical education which suppresses such powers of observation as the student naturally possesses. I am confident that the average medical student easily surpasses in native ability and mental equipment the average of the population of his age and social position. The defects in his methods of application when he appears for his final examination will be explained by all conscientious examiners as dependent upon the imperfections of his education, more especially as all examiners are themselves teachers.

From the moment that he enters the wards until the moment that he safely navigates the shoals and quicksands of Queen Square (or its equivalent) he is confronted with obscure pathological material and rarely the trivial or commonplace, because the subjects selected for admission to hospital are as a rule either seriously ill or afflicted with conditions of complexity or difficulty which demand elaborate investigation. It is not surprising, therefore, that he tends to acquire a distorted impression of the practice of his profession which is going to occupy the whole of his working life, and this frame of mind is fostered by the character of his final examination.

His teachers are obsessed, or at least unduly influenced, by the necessity to produce not efficient practitioners but qualified medical men, and their approach is adjusted to the demands imposed by examinations. Dr. Roberts repeats the well-known instance of failure to recognize an artificial eye. But the circumstances of his education justify the student in expecting that the failure of a pupil to react must necessarily be viewed in the light of a pathological lesion. He is in the position of the jailer who cannot imagine that anybody in the dock can be innocent: unless he is guilty of some crime or other, what is he doing there? I have often been tempted to produce for the clinical examination a number of perfectly healthy subjects in order to see how many candidates would have the courage and confidence to assert that they were unable to detect any lesion.

It is the atmosphere we create in our clinical instruction which inhibits the common-sense approach and leads to the illogically expressed criticism that the powers of observation of the average medical graduate are "relatively undeveloped." Over and over again in a question to a class on an issue of common sense, my appeal has been met with silence until I have issued the invitation to forget that they are medical students but to answer as ordinary men in the street. And invariably the correct response is forthcoming. There is learned talk of future education in psychology, in social medicine, in psychosomatic medicine, as if these are to be additional bucketfuls in the ocean of instruction to which the student has already to submit, instead of a general principle which should underlie every circumstance and detail of his training. No doubt I shall be reminded that the out-patient department should provide this method of instruction *in excelsis*. So it should, and so it can, but how rarely is this achieved! The circumstances under which such practice is necessarily conducted afford great difficulties to even the most enthusiastic and energetic out-patient physician intending to combine attention to the sick with undergraduate instruction. It is clear, moreover, in what light such trivial or relatively uninteresting conditions which possess the minimum of examination value are generally held, when this work is entrusted to the most junior members of the staff, who have to accept this apprenticeship as a preliminary to promotion to the wards. True, there has to some extent been a move to demand both in-patient and out-patient attendance from all members of the staff, but the most logical application from the point of view of efficient instruction would be promotion in the reverse direction, entrusting the out-patients to the most senior and experienced.

I have mentioned the nature of the final examination in influencing the character of clinical instruction. May I be permitted to enumerate a few examples of the type of question which I have thought appropriate to test the ability of a candidate and assess his suitability to begin the practice of his profession and employ the knowledge he possesses?

What is the significance of pallor?

What can be learned by a visual examination of the nails (or the tongue, or the sputum, or the stools)?

How would you investigate a complaint of tiredness in a man of 45?

What are the commonest causes of headache in a child of 10 years of age?

I know that this is not the type of question that is popular with examinees. The answers are not to be found conveniently arranged in any textbook of medicine. They cannot be dealt with by selecting and putting on the appropriate gramophone record. Nor, it must be admitted, are they particularly popular with fellow-examiners, who naturally prefer to run the eye rapidly down a column to see if the essentials for a pass are present rather than plod wearily through material, generally illegible and more or less unreadable. No wonder one sees the preponderance of the stereotyped request for the causes of haemoptysis, the treatment of gastric ulcer, the signs and symptoms of this, that, or the other condition.

Was it Talleyrand who said that a good doctor should know a little about everything, even medicine? This, I suppose, is really what is nowadays interpreted as social medicine. I have the impression that those of us who started 35 or 40 years ago mixed more freely with our patients. Perhaps we had more leisure to observe; perhaps we were less overwhelmed by the complexities with which the modern student is obliged to contend. I used to wonder why some of my contemporaries, utterly undistinguished academically, were so successful in practice. But now I cease to wonder. They had spent their time to advantage in learning a little about everything, even a little medicine.

Dr. Roberts pleads for a revolution in medicine. I am sure he is right, but I wonder who have the knowledge and the authority to reconstruct the curriculum and to choose the right type of teacher, one who combines adequate knowledge with a correct clinical approach. I have heard of a physician to a teaching hospital who refuses to see any patient under his care unless and until his house-physician has obtained every possible pathological and radiological examination. He is then prepared to shuffle a pile of reports and deliver an opinion. It seems unnecessary that he should see the patient at all. Imagine the devastating damage that such a procedure does to his clinical clerks. This is an exceptional example, but the principle is reproduced to some degree only too often in teaching schools.

It is difficult to define what it is easy to recognize. Many of us can see the imperfections of a system while unable to reconstruct. We are inclined to babble about the importance of first principles in training, after which the further instruction of the general practitioner or the production of the specialist would be a comparatively simple matter.—I am, etc.,

London, W.1. ADOLPHE ABRAHAMS.

Limitations of Current Medical Training

SIR,—The article by Dr. Ff. Roberts—and the previous one in the same strain by Sir Walter Langdon-Brown, to which Dr. Roberts refers—have emphasized a state of affairs which has exercised my mind a good deal during these war years—namely, the training of the new entry in our profession. Having retired from practice before war started, and been out of touch with students and junior practitioners for some time before that, I have been startled and much disturbed by the limitations of current medical education as exhibited by the young doctors whom I have met in E.M.S. and other public hospitals since war began (when I returned to harness). The modern trend to specialization is, no doubt, inevitable, owing to the complexity of scientific medicine and surgery nowadays; and it should be beneficial if properly controlled. As things are, however, the

new generation, in my view, specializes at far too early a stage, and undertakes to become an expert in some branch of our art long before any real knowledge of medicine or of human nature has been gained. The result is a great number of pseudo-specialists, many of whom openly boast of knowing nothing outside their specialty; in fact, they are in many cases grossly ill equipped to practise even that. Unfortunately those who remain in general practice are only too prone to refer all except the most trivial cases of illness to one or more specialists, whose verdicts are accepted as if they were oracles from heaven, without critical examination of any kind. Since many of these self-styled "specialists" are ill educated, the most grotesque errors of diagnosis and treatment are liable to be perpetrated.

But there is an earlier stage than this at which clinical teaching seems to me to have taken a wrong turning. The student is brought up to believe that diagnosis can only be made in the pathological laboratory and the *x*-ray room. Every new case in a teaching clinic is at once subjected to eight, ten, or a dozen pathological tests, nearly all of which are superfluous: instead of using laboratory findings as aids to, or checks upon, diagnosis, after a thorough and full investigation of the physical signs, the modern student never learns anything about the latter, but relies entirely on a series of reports from these special departments. Observation of the patient is so cursory as to be non-existent: the elicitation of physical signs is fast becoming a lost art.

I once saw two consecutive cases of lobar pneumonia in the same ward in which the consolidation was diagnosed on the wrong side. What had happened, I suspect, was that the diagnosis was made on laboratory findings. Being incapable of learning anything from percussion, because he had never been taught the proper way of doing it, and not observing that one side of the chest was immobile whereas the other was working overtime, the R.M.O. mistook the suppressed breath sounds of a solid lung for the normal, and the exaggerated vesicular murmur of the unaffected side for bronchial breathing. To complete the story, the patients were dosed so immoderately with sulphapyridine that both developed lung abscess and died.

Nor is this a highly exceptional case. In many hospitals practically every case of pyrexia, even when clearly due to an abscess, is at once subjected to sulphonamide treatment, quite regardless of whether this is indicated or not; and this drug treatment, even when it is likely to be beneficial, is often pressed to absurd overdosage. When penicillin is made widely available I expect to see just the same sort of indiscriminate misuse of it.

As for the diagnosis of cardiac disease, for all the effect James Mackenzie has had on the young generation (and therefore, presumably, on their teachers) he might never have existed. Very few of the junior members of the profession think of ascertaining the position and character of the apex beat, the size of the heart, the regularity of its action, or its functional efficiency. Murmurs are their sole criteria of cardiac disease, usually misinterpreted at that. Quite recently I saw a woman in her sixties, perfectly able-bodied and free from all symptoms of (physical) disease. Eight years ago she was examined by a young doctor who is well thought of by some of his seniors: he then diagnosed mitral regurgitation, mitral stenosis, and aortic stenosis (she was equally free from symptoms then). She has, in fact, an apical systolic murmur due almost certainly to atheroma, and no other abnormal sign of any description whatsoever. Mitral stenosis, more than any other valve lesion, is diagnosed about four times as often as it exists.

I am sure that the fault lies mainly with the clinical teachers, who demand of their residents all kinds of irrelevant pathological reports on every case; the latter accordingly get into the habit of having even more laboratory reports ready for their chiefs when they come, so as to be able to anticipate every requirement. The students in attendance naturally think no diagnosis is possible without all this expensive and time-wasting redundancy. I know of a case where a resident, confronted with a simple dislocation of the jaw, sent the patient a considerable distance in a car to an *x*-ray clinic (thus wasting time, petrol, and a film) for confirmation of the diagnosis: on the return journey the dislocation reduced itself in the car.

No so long ago I put these views to two pretty senior teachers at two different medical schools. One said, "Well, if you saw, as I do, the mistakes made in general practice for want of an elementary laboratory report, you wouldn't wonder at my impressing on my students the need for this assistance." The other said, "I find the laboratory reports are more often right than my diagnoses based on physical signs." Both these answers beg the issue: they are virtually an abdication of the function of the physician, which is to use *every* method of investigation to establish the diagnosis and direct the treatment. Laboratory reports should be only part of the investigation of a case, not the whole of it, as the new entry are being taught to believe. It is perhaps not necessary to stress the wasteful extravagance of repeated and unnecessary laboratory investigations—and my experience in hospitals leads me to believe that quite seven out of eight *are* unnecessary. I will just end by saying that I can show anyone who likes to see her a patient who has had no fewer than 265 blood counts done—I have seen that number of reports, and the pathologist tells me that there were in fact many more, about 400 altogether, he thinks; she is no better now than she was before the series began—nothing has been learnt that has been of any help to diagnosis or treatment; she is, I fear, a typical example of the most up-to-date methods of medical science.—I am, etc.,

HENRY ROBINSON, M.D.

The Road to Positive Health

SIR,—I am one who has lived during fifty eventful years of history, and more than half of them as a general practitioner. During that time advances in knowledge, particularly in the fields of science, have been remarkable, and ever the pace quickens.

Looking around and back I am fain to ask myself, How is it that the difficulties of life still multiply, that the mists of confusion appear ever thicker and thicker? How is it that a true philosophy of life grows more remote? The ignorance, class hatred, bitterness, vice, the misery, the squalor and wretchedness of so many homes, all these things that I have witnessed, how is it that these still abound, even in this supposedly enlightened country? How is it that after two thousand years of so-called Christianity the unspeakable horrors of the present and the last wars, with cruelty unsurpassed in the world's history, should still be possible among civilized men? How is it that in the world of to-day there exist as many inherent devils, monsters, imbeciles, and perverts of every sort and kind as there were before the birth of Christ?

How is it that such musings can make all the poetry of literature, of music, of colour to appear as but the mocking diversions of unreality? The answer that I find is that man is master or would-be master of all things but himself; that he has devoted all attention to his surroundings and but little or none to himself or the fundamentals of his origin. In every walk of life, the medical not excepted, modern trends and training have produced a plethora of able technicians, but they are responsible, too, for a veritable dearth of stylists. If the question were asked, What is the profession of the doctor? ninety-nine out of a hundred answers would be, The treatment of the sick. The pages of your *Journal*, Sir, are filled with the endless pursuit of, the latest contrivances for dealing with, the disease enemies of mankind. With the passing years of the physician's practice the conviction grows that, however great the absorption of the mechanic in the repair of broken-down machinery, or the joy of the restorer in his own ingenuity, yet, inasmuch as treatment or even cure is not prevention, and the machine is but a machine in part, the theme is not based on ultimate causative factors, and practice therein is bound to eternal frustration, and may even defeat its own ends. When this is accompanied by such reflections as outlined above, then indeed a sense of utter futility may impose itself. Doctors will agree that the definition of their work is altogether too narrow, and that experience leads to a knowledge of people and a philosophy of life which is both wide and deep. Yet that knowledge is seldom publicly voiced, and even less often with more than the weight of isolated individuality.

The introduction of a national medical service, always provided that the doctors escape political submersion, may enable the profession to make its voice heard, as it has not been heard hitherto, in the councils of the nation, and to join in

shaping the eugenics of the race, using the term in its widest sense. Will the opportunity be taken? In the years immediately to come this country and the world will have need of all the collective wisdom of its wise men if it is to build anew and better upon the years of suffering and of human degradation. Among these counsellors the doctors, speaking as an influential and united body, should surely be found.

All the implications of positive health—and I appeal to my colleagues to reflect thereon—if probed to their ultimate foundations, will be found to extend far beyond even those premissed in the British Medical Association report. In my belief acceptance of those implications would herald in a fullness of breadth and splendour a reorientation of the ethics of medicine.—I am, etc.,

E. D. BROSTER.

Specialties and Diplomas

SIR,—There is so much in Dr. Walshe's stimulating article on higher or postgraduate studies in your issue of Sept. 2 which commands assent that I hesitate to appear in anv way critical of his views. However, I do not think that he is right in his advocacy of the segregation of certain specialties, nor do I think he presents the case for and against postgraduate diplomas quite fairly. In regard to the first point, he advocates that "neurology, dermatology, paediatrics, etc., should be pursued methodically in adequately staffed and equipped special hospitals and schools." I cannot help feeling that Dr. Walshe's favourable view of such a system in general is based on a particular example. The success of the National Hospital for Nervous Diseases in relation to the ideals at which we aim will be generally accepted. The reason for this success may perhaps be attributed to the fact that neurology is a well-defined branch of medicine, and in that the precision of its methods and the conclusions of which it is capable have attracted many of the best intellects in the profession. Whether this hospital could have benefited medicine as a whole even more than it has if they who there studied structural change in the nervous system had been more closely associated with those concerned with disorders of its functions is a matter of opinion.

To put dermatology on the same footing as a specialty is open to question. The dermatologist is more often than not considering a surface manifestation of a deeper disease, and to segregate the treatment and study of such conditions can no more be expected to further progress than if we were to establish, say, a special hospital for all those suffering from a limping gait.

Paediatrics, it seems to me, should certainly be studied in a general teaching hospital, unless these are to be entirely emasculated and yet remain responsible by virtue of their organization for a large proportion of early postgraduate training.

What Dr. Walshe's "etc." contains is a matter for speculation. If neurology, thoracic and rectal surgery, and orthopaedics are to be included under this heading, I would submit that these subjects are but subdivisions of general surgery and that progress and education in medicine will be best served if they form sections of a general teaching organization. Dr. Walshe's statement, "The one or two men staffing the small special department must perforce work in comparative intellectual isolation," may be true of some existing organizations in our smaller teaching hospitals. The remedy is not to isolate them further in special hospitals, but to extend their sphere of activity and ensure contacts of their staff with workers in all branches of medicine. If a teaching unit as recommended by the Goodenough Committee controls at least 1,000 beds (chap. 3, para. 27), it will be possible to provide staff and adequate in- and out-patient accommodation for most of the recognized special subjects. The success of the Mayo Clinic in many fields of postgraduate teaching and research may be put forward as an example of the value of the mutual contacts and discussions which it has made available to members of all branches of the foundation.

In his assessment of the disadvantages of postgraduate diplomas Dr. Walshe does not consider the oldest and best-established of these based on the earliest form of specialization in medicine—namely, the F.R.C.S. and M.R.C.P. Both these diplomas are generally accepted as evidence of a man's sound early training in the basic sciences and his subject; few would regard them as more than that. In their present form and conducted by examiners imbued with the right spirit they do ensure a period of study which is a salutary experience and discipline for the majority. Classification by examination has its obvious defects, but preparation for higher examinations takes but a small fraction of the time necessary to the training of an individual in the highest standards of medicine. Admitting the advance and need for specialization—and Dr. Walshe does—it is reasonable to suppose that the examinations for diplomas in certain subjects can be so planned that a comparable knowledge of the basic science in relation to the specialty has been required. The further progress of the specialist will always depend on his innate ability and his later opportunities for study.—I am, etc.,

Oxford. C. MAX PAGE.

Refresher Courses for the G.P.

SIR,—Dr. Walshe, in his admirable survey of ideals for postgraduate medical instruction (*B.M.J.*, Sept. 2, p. 297), condemns refresher courses for general practitioners. These, he says, are of little or no cultural value, and their influence is but transient.

This has not been our experience at the Royal Northern Hospital. Practitioners were loud in their praise of these courses; indeed, some of those who attended continue to write to my colleagues and myself of the benefits they received from our refresher courses, the last of which was held five years ago! Many of the doctors went so far as to state that the clinical facilities they were afforded and the teaching they received at the Royal Northern Hospital proved to be of lasting benefit to them in their professional work.

In this connexion I should like to point out the great possibilities of extending postgraduate instruction at the non-teaching hospitals. As opposed to 11,600 beds controlled by the teaching hospitals, the non-teaching hospitals of the British Isles possess 51,000 beds. Furthermore, the out-patient departments of some of these institutions are favoured with clinical material second to none. Again, those interested in this subject can easily verify that teachers are not lacking at these hospitals; indeed, they will find that, owing to an unexplained anomaly almost peculiar to this country, some of Britain's best-known teachers and consultants are relegated entirely to non-teaching hospitals. These facts call for an explanation as to why the non-teaching hospitals had little or no direct representation in the recent conference with the Minister of Health on the subject of medical education and consulting practice.—I am, etc.,

London, W.1. HAMILTON BAILEY.

SIR,—Dr. Walshe in his article (*Journal*, Sept. 2) doubts the value of short refresher courses for general practitioners. As a general practitioner I agree with him in so far as the short courses run before the war for panel practitioners are concerned. I attended one in 1938 which lasted a fortnight. Looking back on it my criticism would be that a fortnight was much too short a time for us to get back into the academic atmosphere; that it was held in a hospital which was not a medical school; and that the staff of the hospital, who were as keen as we were that the course should meet our needs, were very uncertain of the kind of teaching that would serve this end.

The postgraduate training of a general practitioner who intends to remain in general practice, and who is not seeking a diploma with a view to specializing, should, I think, be on the following lines. The period should be a full academic year. The student should be given appointments with definite if limited responsibilities in the practice of the hospital—as a clerk or dresser in the various departments—and at the same time he should have the opportunity of attending tutorial classes covering the field of medicine in its widest sense. A general practitioner does not need to know the details of surgical, pathological, or other special techniques; but he does want to know what can be done by methods introduced since his student days, and he needs to check and revise the methods he has been accustomed to use. I believe, however, that the most valuable part of a course of this kind would be the rubbing of one's wits against one's fellow students', and the

living again in an atmosphere of active thought. The school to give such training should be specially organized for the purpose—not tacked on to an undergraduate school or to a research institute, nor should it be a school for potential consultants and specialists who are seeking a higher diploma. If it should become possible for all general practitioners to spend one year in ten in such a school the level of medical work would be not only raised but kept high.—I am, etc.,

Kingswood, Bristol. N. S. B. VINTER, M.B.

Food and the Nation's Health

SIR,—The White Paper has been from time to time criticized for its meagre references to the preventive side of medicine in general, and to that of nutrition in particular. Is it not time that the Ministry of Health should be pressed to give assurances that this fundamentally important problem will be tackled energetically the moment the exigencies of the war allow, and that it will be looked upon as an integral part of any health service that may be forthcoming?

During the last twenty years or so a vast amount of information has been acquired showing the close relation between food and health—both physical and mental. It is a humiliating thought that animal-breeders have a much keener appreciation of the importance of feeding their stocks properly than the authorities who are responsible for providing the nation's food. The medical profession has been stressing for years the virtues of a wholemeal loaf, an uncontaminated milk supply, a fresh fruit and vegetable supply, and other food reforms. The response of the authorities concerned has been far from satisfactory.

To show what can be done in a small way, and in a comparatively short time, I need only refer to the efforts made by the Cheshire Medical and Panel Committee and the Peckham Health Centre to raise the standard of the people's health. To the best of my belief the work of these two bodies has been carried on without any support—financial or otherwise—from the Government or any public authority.

The Minister of Health, with all the resources that he requires at his disposal, has a supreme opportunity *now* to initiate a long-term plan for the reduction of sickness, founded on a more rational and natural basis, and at much less cost, than by the methods set forth in the White Paper.—I am, etc.,

Walton-on-the-Hill, Surrey. C. N. BINNEY.

Tapeworm in Trout

SIR,—I have read with much interest the article by Dr. Hickey and Mr. Harris on the infestation of reservoir trout in Dublin with *Diphyllobothrium* larvae.

In 1944 Duguid and Sheppard recorded a similar outbreak among trout in a South Wales reservoir, but in this case the natural definitive host was not found. Later, an experimentally infected rat was kindly sent to us by Prof. Duguid, and material obtained from this animal enabled us to complete the life-cycle of the parasite in another mammalian species, the dog. Coracidia, which emerged from eggs passed in the faeces of the rat, were fed to *Cyclops*, which in turn were fed to the stickleback (*Gasterosteus aculeatus*). The plerocercoids which developed in the body cavity of these fish were shown, both directly and after passage in the pike, to infect the dog. In view of this fact, Dr. Hickey's implication that the two outbreaks are similar, and that in Ireland, at any rate, the gull and cormorant are the definitive hosts, is of considerable interest.

If we are to accept this suggestion, then this particular species of *Diphyllobothrium*, which appears to develop equally well in the mammalian as in the avian host, exhibits a degree of specificity which is surprisingly low, even among the Pseudophyllidea. While Dr. Hickey's suggestion may be perfectly correct, the evidence he produces is insufficient on which to base a statement that the adult tapeworms found in the gull and cormorant have resulted from the ingestion of plerocercoids from the trout, for, so far as we can ascertain, he has as yet made no attempt to support this statement by actual feeding experiments. The fact that Dr. Hickey has considered the causative agent of the Welsh and Irish outbreaks to be the same has apparently been made on the similarity of the plerocercoids from each of the outbreaks. A proportion of the plerocercoids recovered by Duguid and Sheppard were atypical, as compared with those of *Diphyllobothrium latum*, showing incipient genitalia and evidence of segmentation. A possible explanation is that the trout in South Wales were infested with plerocercoids belonging to two distinct species of *Diphyllobothrium*, one of which develops in the avian and one in the mammalian host.

A full account of the life cycle of the parasite which caused the outbreak among trout in South Wales will be published in the near future.—I am, etc.,

K. UNSWORTH, B.V.Sc.

Department of Parasitology,
Liverpool School of Tropical Medicine.

Episiotomy

SIR,—In his letter on episiotomy (Aug. 26, p. 291) Dr. H. S. Gaskell quotes a London postgraduate teacher as saying: "Do an episiotomy in all primips." To me this seems most unfortunate teaching. By all means do an episiotomy where the only alternative is a serious perineal tear; but to suggest that the perineum can never be saved by any other means is to rate our skill pretty low—lower than that of many a midwife.

However, the object of this letter is not to criticize but to draw attention to a simple tip which seems to be less widely known than it deserves. Like many good things, it is very simple. When the greatest diameter of the head is beginning to stretch the perineum the mother's legs should be fully extended at the hips. I first saw this point mentioned in a short note by Dr. W. E. Fothergill (*Medical Annual*, 1921, p. 284), and I earnestly commend it to anyone—midwife, practitioner, or even postgraduate teacher—who has not given it a trial. As Dr. Fothergill remarked, your trousers don't tear when you are standing, but when you are bending down.—I am, etc.,

Falmouth. W. E. H. BANKS.

Military Psychiatry

SIR,—A very interesting point about the military psychiatry in the Middle East is that if there had been enough transport a large number of men who were sent back to duty and recovered would have been sent back to this country to be discharged from the Service. It would be a great help to older practitioners if the figures given by Col. Craigie might be transposed into the unofficial classification of the last war. I am particularly interested, because I have had the very unusual experience of acting as M.O. to a mixed unit of Army and Air Force in two wars. In both wars I found a big difference between the two Services. We used to divide the psychological cases into: (1) a very small group of genuine diseases such as dementia praecox; (2) a very small group of malingerers—real wrong 'uns who would deliberately fake a disease; (3) a very much bigger group of "skrimshankers"—men who were making the most of a disability. They saw no reason why they should hurry back to the line; and, anyhow, why should not somebody else take a turn? They were not going back until they were sent, and anyhow they were not going on "any bloody route marches"; (4) a big group of neurotics: the most interesting group was that of the pilots who were firmly convinced that any man who crashed was unfit to fly for the rest of the war. But most of them were the ordinary people who are enormously interested in their health.

If Col. Craigie would put the modern label to these groups, with the corresponding figures, it would make comparison possible.—I am, etc.,

Wetherby, Yorkshire. R. L. KITCHING.

Laryngeal Spasm under Pentothal

SIR,—I would like to congratulate Dr. Philip Ayre on his lucid exposition (Aug. 19, p. 254) on the role of the anaesthetic agent in relation to the surgeon. Like dermatology, it is not only what is put on that matters but the way it is put on.

Believing, as I do, that laryngeal spasm is an avoidable complication of pentothal anaesthesia, I sincerely think that Dr. Ayre

must be so skilled that he has never, perhaps, needed to attempt intubation on a patient with severe spasm. I have tried once. It was a simple short orthopaedic case who vomited and developed spasm following pentothal administration 4½ hours after his breakfast. In this case the false cords were so tightly apposed that intubation was impossible. I dare say a metal tube could have been forced through, but at what risk? Anyway, the patient recovered later with oxygen inflation.

My impression is that once severe spasm has been allowed to develop, nothing can be done until the false and true cords have relaxed. This relaxation unfortunately does not occur until the patient is so anoxaemic that he is pulseless, black, and virtually on the point of death. However, if at this stage the mask is on the patient's face and the anaesthetist is prepared to inflate the lungs a dramatic recovery should occur. In these circumstances intubation is surely unnecessary and a waste of priceless time.

How is laryngeal spasm avoidable? May I, Sir, have further space to attempt an answer to this inevitable question?

1. Atropine helps by diminishing the chance of secretions being drawn on to the larynx.
2. Respiratory obstruction must be avoided during the injection. Even one obstructed respiratory effort may produce a cough and spasm. One so often sees pentothal being injected while no attempt is made to lift the relaxed jaw. Consequently every effort at respiration produces merely a tug on the larynx, and when at last the airway is freed, mucus is drawn on to the larynx, and spasm results.
3. Avoid using pentothal, certainly in large doses, on a patient whose stomach is not empty.
4. Take away at once any irritant, be it cyclopropane, ether, or nitrous oxide, till the spasm has passed, as it will if the irritant is quickly removed. This may cause delay, but it is safe.
5. Give oxygen as soon as the patient becomes dusky. Do not wait till he is blue.
6. Avoid inserting an airway too soon. This may produce gagging and a cough—the precursors of spasm.
7. Avoid attempting intubation on the uncocainized larynx following pentothal alone unless a "knock-out" dose has been given.

Many tragedies have been attributed to pentothal, but I have not heard of one unavoidable death due solely to pentothal when given competently.—I am, etc.,

P. S. A. HEYWORTH.
Fl. Lieut., R.A.F.V.R.

Trilene Anaesthesia

SIR,—I read with great interest Dr. Enderby's excellent paper on trilene in the *Journal* of Sept. 2. Coming, as it does, from one with so wide an experience of this agent it will, I am sure, prove very valuable to all anaesthetists who are in search of authoritative guidance in this somewhat controversial subject. There are, however, one or two minor points in relation to trilene anaesthesia which I should like to mention by way of slight amplification.

It is possible to eliminate the risk of overdosage, so properly emphasized in this article, if the nitrous oxide and oxygen are blown over the surface of the trilene intermittently for 5 out of every 10, 15, or 20 minutes according to the requirements of the patient. This procedure prevents undue elevation of the respiratory rate, which in fact can be used as a guide to depth of anaesthesia, and at the same time does not mar the smoothnesss of the anaesthetic. I should also like to draw attention to the electrocardiographic studies of the heart's action during the administration of trichlorethylene recently published in America (Waters, R. M., Orth., O. S., and Gillespie, N. A., *Anesthesiol.*, 1943, **4,** 1; and Geiger, A. J., *J. Amer. med. Ass.*, 1943, **123,** 141). These workers noted the rather ominous occurrence of multiple-focus ventricular extrasystoles.

Trilene is non-explosive and practically non-irritant, and is the best available volatile agent for use in the presence of diathermy. The fact that it cannot produce more than at best light second-plane anaesthesia will, however, sharply limit its usefulness unless the avertin–trilene sequence proves generally satisfactory. Since its action on the cardiac rhythm is still suspect, and the signs of anaesthesia are sometimes misleading, it is doubtful if anything is to be gained by using trilene as a routine adjuvant to nitrous oxide and oxygen instead of ether, except, perhaps, in patients with an extremely irritable pharynx who will not tolerate ether vapour without violent coughing. Finally, let us teach our students an even healthier respect for trilene than they have for cyclopropane, because of the two the former is probably the more dangerous drug.—I am, etc.,

Manchester Royal Infirmary. A. R. HUNTER.

Congenital Atresia of the Oesophagus

SIR,—In an annotation in your issue of Aug. 26 you were good enough to refer to my interest in this matter as set out in the Haliburton Hume Memorial Lectures delivered in May of last year (*Newcastle med. J.*, 1944, **22,** 1). Some of your readers may like to know that ample justification for my confidence in the surgical management of this condition has been provided by the work of William E. Ladd of Boston, U.S.A., who is so well known for his successful surgical attack on congenital defects in infants. That surgeon has made a notable contribution to this subject, and has recorded 5 successful cases among 34 subjected to operation. An account of his work will be found in a fully illustrated paper published in the *New England Medical Journal* for May 25, 1944 (**230,** No. 21), entitled "The Surgical Treatment of Esophageal Atresia and Tracheo-esophageal Fistulas."—I am, etc.,

British Postgraduate Medical School, London, W.12. G. GREY TURNER.

Service Medicine

SIR,—In my humble opinion it is regrettable that you published in your issue of Aug. 19, under the heading "Service Medicine," a letter from the pen of a correspondent who is anonymous.

So long as the war continues every effort of all the members of our profession, particularly those of us who are privileged to serve the armed Forces of the Crown, should be directed solely to perfecting our methods, both clinical and administrative, of alleviating the sufferings of the wounded and of the sick. Such controversy as your anonymous correspondent would raise cannot contribute to the wartime efficiency of the profession; on the contrary, if your anonymous correspondent really has the following he claims it could seriously impair the profession's paramount and only function during the continuation of hostilities. Anonymity is a safe and fine fortress from which to level ill-timed, ill-judged, and unbalanced attacks against professional colleagues.

It is well for all of us to remember that, as doctors, we must both *minister* and *administer*. The time to discuss the relative importance of these two professional functions, as well as to what extent they can be, have been, and are being combined, is not now, when all our energy is required to serve, in our professional capacity, our air-crews and the ground-staff by whose efforts our aircraft are maintained.—I am, etc.,

FREDERICK W. ROQUES, Group Capt., R.A.F.
Another Temporary Medical Officer.

SIR,—Of course "Temporary Serving Officer" is right when he affirms that Air Cdres. Cade and Conybeare are making a serious mistake when they paint an idealistic picture of Service medicine. Probably if he and I were in the same consultative position we should be in a different position clinically to make similar assertions.

I speak as a resident medical officer of a teaching hospital before the war, and over seven years as a reserve officer in one of the Forces. I fully endorse your correspondent's views, and agree with him when he says that the vast majority of Service doctors, while recognizing the need for compulsory regimentation in time of war, deplore the system and accept with resignation the methods of the bureaucratic machine. If I were a sole example of a medical officer bereft of clinical work for five years I should not grumble but accept the position as inevitable. But the "anomalies and abuses" do exist; administrative posts do carry promotion, which more often than not is not indicative of merit but dependent on the recommendation of the commanding officer, who may know little or nothing of the individual professional capabilities, and regards him as a "good chap." I could quote scores of cases where competent men are not getting clinical work because the

key posts are for the most part held by regular officers. The medical officer is not assessed on clinical merit: I know of an expert in tropical diseases who functions as a medical transport officer abroad. A large part of medical organization could be fulfilled by non-professional officers performing the house governor's duties of a civilian hospital.

How many patients in Service hospitals seek the advice of their own family doctor privately while on sick leave or when the opportunity presents itself? There are many illnesses of mind and body which the patient prefers not to include in a Service record compulsorily reported by the Service medical officer.

Do let us think more of the art of medicine—of clinical work first and foremost—the best possible treatment for all and sundry by every available means; but doctors and not administrators must work out the best means how.—I am, etc.,

"PERMANENT RESERVE."

Psychological Medicine and the Family Doctor

SIR,—I think it only fair that a senior family doctor be allowed some observations on Dr. Gillespie's article (Aug. 26, p. 263).

The whole article suggests that the family doctor does not realize the psychological basis of his patients' complaints. This is not true. Dr. Gillespie states: (1) Dr. Halliday found 35% of his chronics to be entirely psychological. (2) Clouston found 50% of his immediate neighbours aberrated. (3) Two people in uncongenial jobs developed the one vertigo and the other headaches. (4) A man in the Army developed a skin disease because to please his father he volunteered for dangerous jobs he had no intention of pursuing further.

In answer I would say: (1) Halliday's material consisted of a fraction of the family doctor's work. How many did he cure? (2) Clouston was the only constant factor among those demented variants. Could it not be that Clouston was abnormal? (3) The only cure for those two people would be to change their jobs to suit them and to promote the stick-in-the-mud. As society is constituted one cannot do this. The only effect would be to have all the rest of their mates becoming vertiginous and "headachy" as the shortest road to a change of job and promotion. (4) Similarly the cure for this man is to give him suitable environment and please his father at the same time. How can you run an Army on such a footing?

Assuming that the psychologists are correct, is it right treatment to mass the ordinary sick in hospitals and the mentally sick in mental hospitals? The psychological pattern of the average hospital ward would puzzle a psychiatric Solomon. How terrible that little children when sick should be massed together in order that their complexes may be fixed for life!

The family doctor gets tired of the specialists talking down to him. It would be laughable were it not that the general public more and more are reading those medical articles and the sensational press delights to exploit them. How it loves to cull from the oratory of the specialist the shortcomings of the family doctor!—I am, etc.,

Glasgow. JAMES COOK.

Prevention of Industrial Dermatitis

SIR,—In his further letter on this subject (Aug. 26, p. 290) Dr. L. B. Bourne misquotes the incidence figures for industrial dermatitis in 1943, as set out in my report (May 13, p. 660), by adding the machine-shop totals to those of the factory as a whole, in which of course they were included. He claims only "two cases in many thousands of workers this year," but I note that in his former letter (July 8, p. 57) he gave "two *notified* cases during the past year," and he then admitted also "a number of rashes of various types due to sensitization from industrial products." He does not give the total incidence of all industrial dermatoses in his factory and those losing any time, as I have done, and without which no comparisons can be made. Two notified cases—that is, cases absent from work over 3 days—may mean a large case incidence, and even skin diseases that are cured at the factory surgery without absenteeism cause a great deal of lost working time in attendance for treatment. Dr. Bourne infers that I rely solely on skin cleansing by means of the neutral sulphonated castor oil (N.S.C.O. cleanser), and ignores the stress I laid upon the Factory Department's recommendations as to machine guarding, protective clothing, and adequate supervision. I would remind him also that my success with the N.S.C.O. cleanser followed my previous failure to prevent the occurrence of oil and paraffin dermatitis with barrier creams before, and lotions after, work. My statistics for all industrial dermatoses to date are as follows:

	1942	1943	1944 (7 months)
Case incidence	414	185	7
Ratio to personnel	12.5%	5.7%	0.03%
Notifiable cases	6	2	2

The N.S.C.O. cleanser was first used in Nov., 1942, and its use was gradually extended to workers on all "dirty jobs" throughout our factories. My own experience with it is being confirmed by the experiences of 54 other large industrial concerns and Royal Ordnance factories to which it has been supplied. Even if barrier creams, in machine shops, would do all Dr. Bourne claims, I greatly prefer the simplicity of the N.S.C.O. cleanser to the application and removal of the barrier substance. The N.S.C.O. is obtainable from Reynolds and Branson Ltd., 13, Briggate, Leeds, 1.—I am, etc.,

N. HOWARD MUMMERY,
Medical Officer, Aircraft Factory.

Thumb-sucking

SIR,—Dr. Mary Sheridan, writing of certain speech defects and malocclusion of the jaws (Aug. 26, p. 272), says: "The frequency with which I either observed thumb-sucking myself or obtained a history of the habit from the mothers leaves no doubt in my mind of the permanently harmful effects of this practice." Is her mind not shedding its doubt on this subject much too easily? Did she contrast the percentage of thumb-suckers among her malocclusion cases against the percentage found in normal controls, or is she merely mistaking her clinical impression for scientific observation?

My own clinical impression, although gained from a much smaller number of children, is precisely the reverse of hers—namely, that thumb-sucking is not important so far as dental occlusion is concerned. I have noticed, too, that it is the flesh-mortifiers who inveigh most heavily against the habit. If any scientific observations on thumb-sucking have ever been made the references would be of interest. If there are none we ought not to make any further oracular statements about it.—I am, etc.,

COLIN EDWARDS.

Débridement

SIR,—In your leading article on the control of gas gangrene in your issue dated May 20, 1944, I was surprised to find the word "débridement" misused by the writer when he meant to say "excision." Reference to a dictionary or a work by a French surgeon will show that "débridement" means the opening up of a wound and all its recesses to facilitate the removal of foreign bodies and the establishment of drainage. A leader-writer's use of words should be above reproach.—I am, etc.,

India. R. F. W. K. ALLEN.

Dental Caries

SIR,—Dental caries is not a rare disease; most of us, although we are not dentists, have had an intimate acquaintance with it. We are familiar with the whited sepulchre which shows only a slight stain although caries has penetrated to the pulp tissue. It is highly probable that cases of this type were missed by Mellanby and Coumoulos in their survey of London school-children (*B.M.J.*, 1943, **1**, 837). But to explain the increase of the "non-caries" group that they found it would be necessary to assume that the percentage of children who had caries of this type and no obvious caries had increased by 17.7 between 1929 and 1943. Would not this be much more improbable than an actual reduction in the incidence of caries? It should be possible to get statistics that would answer this question. Without some statistics to support it the objection raised by Miss Smith (*B.M.J.*, 1944, **2**, 94) does not seem valid.—I am, etc.,

London, E.1. J. R. MARRACK.

Obituary

SIR JOHN LUMSDEN, K.B.E., M.D.

Sir John Lumsden, whose death is announced from Dublin, had done extremely valuable work for the Red Cross in Ireland before, during, and after the last war. In 1915 he was made a Knight of Justice of the Order of St. John of Jerusalem, and in 1918 he was created K.B.E. In more recent years he held office as chairman of the Joint Committee in Eire of the British Red Cross Society and the Order of St. John of Jerusalem.

He was born on Nov. 14, 1869, at Drogheda, son of John Lumsden, a bank manager, and received his early education at the Dublin High School and at Taunton School. At Dublin University he graduated B.A. in 1891, M.B., Ch.B., B.A.O. in 1894, and proceeded M.D. in the following year. Soon afterwards he was appointed medical officer to Guinness's brewery in Dublin, and began to organize the medical service for the workmen of that great business and their families. In 1903 he formed the first Division of the St. John Ambulance Brigade in the South of Ireland, and in 1914 was in command of a large company of trained ambulance workers, of whom 70 had reported for duty with the Royal Naval Sick Berth Reserve by Aug. 6 of that year. From the outbreak of the last war he was the driving force behind the organization of war hospitals and nursing services in Southern Ireland, using his own house in Fitzwilliam Place as a depot and distributing centre. Lumsden and the ambulance teams under his leadership tended the wounded in the streets under fire during the Easter week rebellion in Dublin in 1916, regardless of their personal safety. His outstanding courage was recognized by the award of the silver life-saving medal of the Order of St. John and of the British Red Cross Society's medal for special services. During the last two years of the war he served in France with the rank of temporary major, R.A.M.C., on the staff of No. 83 General Hospital, B.E.F.

In addition to his work as chief medical officer to the firm of Arthur Guinness and Co. Sir John Lumsden was for some years senior visiting physician and lecturer on clinical medicine at Mercer's Hospital, Dublin; consulting physician to the Royal National Hospital for Consumption, Newcastle; and external examiner in medicine for the National University of Ireland. He had also been consulting medical adviser to the Commissioners of Irish Lights, and, for a year, physician to the Household of the Lord Lieutenant of Ireland. He was a Deputy Lieutenant of the City of Dublin and a Governor of the Rotunda Hospital, whose licence in midwifery he had obtained in 1893. He was the author of two small books, *Hints on Infant Feeding* (1900) and *Dietary Studies in Dublin* (1904), and contributed a number of papers on professional subjects to this and other medical journals. He joined the B.M.A. fifty years ago.

We regret to announce the death at Sevenoaks on Aug. 25 of Dr. JOSEPH LANGTON HEWER at the age of 84. He had been surgeon to the Mildmay Cottage Hospital, temporary assistant physician to Queen's Hospital for Children, Hackney, and honorary medical officer to the Invalid Children's Convalescent Home, Winifred House, Tollington Park, and the Home for Confirmed Invalids at Highbury. He came of a medical family, being the son of J. H. Hewer, M.R.C.S., who practised for many years at Highbury, in North London, and had several brothers who were members of our profession. J. L. Hewer was educated at University College School and St. Bartholomew's Hospital, and graduated M.B., B.S.Lond. (with honours) in 1883, took the F.R.C.S. in 1884, and the M.D. in 1886. He was in partnership with his father until the latter's death in 1893, when he moved into the old house and continued to practise until 1913, when he retired and moved to St. Albans. On the outbreak of the last war he helped some of the overworked local practitioners, and at its conclusion returned to London, where he had a consulting room with the late Dr. John Adams in Aldersgate Street. Retiring for the second time he made his home at Sevenoaks. Dr. Hewer will be remembered not only for his professional skill but as a humble and earnest Christian. He leaves a son, Dr. C. Langton Hewer, the well-known anaesthetist, and two daughters.

Dr. NATHAN GRAHAM WIGRAM, F.R.C.S., of Sloane Street, S.W., died on Aug. 30. Dr. A. Piney writes: The sorrow caused by the deaths of friends is often increased by the impersonal manner of the writers of obituary notices. One might suppose that the advice of Mephistopheles to the student had been taken seriously: "Wer will was lebendig's erkennen und beschreiben, Sucht erst den Geist heraus zu treiben." This thought comes to me at the loss of "Nat" Wigram, who was not only a first-class doctor but also a man of amazingly vivid personality. His far-sighted and comprehensive knowledge of his patients made him their trusted friend as well as their medical adviser—an adviser with whom they rarely argued, so certain were they of his integrity and professional skill. And those consultants to whom he referred his patients knew Nat as a man capable of reasoned criticisms of their opinions; and not only was he capable of doing so, he did so when he thought necessary in a way that nobody could ignore. He expressed himself forcefully and clearly, but nobody took it ill, because it was always obvious that the patient came first and the consultant's feelings a long way after. Wigram was a man to whom life was well worth living; and, although he had known for some years that his illness must prove fatal, he never let his own troubles make any difference to the care he gave his patients or to his intense interest in the progress of medicine. When he was confined to bed by the relapse that proved fatal, as he knew it would, he often said, "At least I have always given my patients good service." Death had no terrors for him, for, as he said more than once, "I have done most of the things I wanted to do, and, on the whole, have not done them badly." Those who knew Wigram will agree that he spoke no more than the truth. Well could he have said, "I warmed both hands at the fire of Life; it sinks and I am ready to depart." Wigram's death would have been a great loss at any time, but, in these days of standardized thinking, the passing of one who respected the opinion of the expert, while still using the perspicacity of the really good general practitioner, leaves a gap in the medical and social life of London.

We regret to announce the sudden death on Sept. 2, at Saltburn-by-the-Sea, Yorkshire, of Dr. ERNEST JOSEPH BURNETT in his 80th year. He studied medicine at Edinburgh University, graduating M.B., C.M. in 1887, and he obtained the M.R.C.P.Ed. in 1898. He was for many years consultant to the Brine Baths at Saltburn and medical officer to the Northern Convalescent Home there; he had also been surgeon to the North-Eastern Railway, medical officer to the Soldiers' Convalescent Home at Skelton, and medical examiner for the Women Emigrants Society and for the Canadian and Australian authorities responsible for immigration. Dr. Burnett joined the B.M.A. in 1899 and was a past-president of the North of England Branch. He was for a considerable time a Justice of the Peace, and received the M.B.E. in 1920.

Dr. GEORGE BARTLEY MCKEAN died suddenly at his home in Ledbury, Herefordshire, on Sept. 2. He was born in Belfast in 1876 the son of William McKean, and after schooldays at the Royal Academic Institution, Belfast, came to London to study medicine at University College Hospital. He qualified M.R.C.S., L.R.C.P. in 1902, and took the M.B., B.S.Lond. degrees and the F.R.C.S.Ed. diploma in 1906. From 1908 until his retirement from active work in 1941 he was honorary surgeon to the Ledbury Cottage Hospital and held a number of other local appointments. Before settling in Herefordshire he had been senior obstetric assistant at U.C.H. and senior assistant medical superintendent of St. Pancras Infirmary, Highgate. Dr. McKean joined the B.M.A. in 1911 and was chairman of the Herefordshire Division in 1924–5.

Dr. EDWARD PHILLIPS, late of Coventry, died peacefully at Oxford on Sept. 4 at the age of 86. After studying medicine at Queen's College, Birmingham, he took the L.R.C.P.Ed. diploma in 1881, the M.R.C.S.Eng. in 1885, and graduated M.B. of Durham University in 1886. After holding the post of senior resident medical officer at the Children's Hospital, Birmingham, Dr. Phillips practised in Coventry for half a century, and served for many years as honorary surgeon to the Coventry and Warwick Hospital and consulting surgeon to the Coventry Union Infirmary. He first joined the B.M.A. in 1882, and represented his Division at the Belfast Meeting of 1909. Apart from his medical record Dr. Phillips was a pioneer motorist, and several of his letters on the motoring requirements of medical practitioners were published in the earliest years of this century. He designed a motor cycle for use by medical men in 1899 and used it in his own practice; he also took part in the first 1,000-mile motor-car reliability trial held in this country. He leaves a widow and two sons, one a brigadier in the Army and the other serving in the R.N. emergency vessels.

No. 34

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Aug 26.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	30	1	17	—	—	48	3	20	1	—
Deaths		1	—				—	2		—
Diphtheria	410	9	134	95	15	614	35	194	69	23
Deaths	3	—	1	1	—	10	—	3	2	—
Dysentery	299	11	15	—	1	129	19	95	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—	—	—	—	—	2	—	—
Deaths							—			
Erysipelas			42	7	1			45	7	—
Deaths		1					—			
Infective enteritis or diarrhoea under 2 years				161					253	
Deaths	62	1	47	27		64	2	7	22	9
Measles*	1,114	21	89	58	25	986	61	19	15	2
Deaths	1	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	66	4	14	—	—	130	7	14	—	—
Deaths										
Paratyphoid fever	14	1	—	1 (B)	3 (B)	7	1	1	—	—
Deaths	1	—	—	—		1	—	—	—	—
Pneumonia, influenzal†	321	13	6	1	1	337	23	8	—	2
Deaths (from influenza)	6	—	1	—	—	7	1	—	—	1
Pneumonia, primary			108	3				137	12	
Deaths		10		5	3		13		6	4
Polio-encephalitis, acute	—	—				2	—			
Deaths		—					—			
Poliomyelitis, acute	25	—	4	2	—	14	2	—	—	—
Deaths		—					—			
Puerperal fever		—	8		4		3	18		—
Deaths										
Puerperal pyrexia‡	151	4	16	—		126	9	14	1	2
Deaths		—					1			
Relapsing fever	—	—			1	1	—			—
Deaths										
Scarlet fever	1,071	29	179	19	29	1,890	215	289	49	58
Deaths	—	—	—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	8	—	4	—	1	16	—	—	2	8
Deaths	2	1	—	—		—	—	—	—	1
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,316	55	46	33	16	1,915	139	115	44	31
Deaths	4	2	2	1	1	6	—	5	3	2
Deaths (0–1 year)	314	26	92	54	21	355	31	46	36	31
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,780	531	561	186	113	3,537	487	498	174	116
Annual death rate (per 1,000 persons living)			12·9	12·1	§			11·2	11·4	§
Live births	5,981	402	868	353	233	5,909	661	892	360	288
Annual rate per 1,000 persons living			17·7	22·9	§			18·2	23·7	§
Stillbirths	185	13	20			184	12	26		
Rate per 1,000 total births (including stillborn)			22					28		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the notifications of measles were fewer by 492, and of whooping-cough by 287; dysentery notifications were up by 51.

The incidence of measles has now been falling for seven weeks. During this period the weekly notifications have dropped by 57%. This week Lancashire reported 95 fewer cases than last. The largest decline for whooping-cough was in Staffordshire, where there were 49 fewer cases.

Dysentery notifications again rose sharply, and the total, 299, has been exceeded only twice during the war. During the week the largest of the new outbreaks were in Buckinghamshire, Eton R.D. 15, and in Huntingdonshire, St. Neot's R.D. 20. The other large centres of infection were Leicestershire 36, Lancashire 28, Essex 28, Glamorganshire 21, Surrey 15, Nottinghamshire 14, Yorks West Riding 13, Cheshire 11, London 11.

Poliomyelitis.—25 cases were recorded during the week, the largest total for two years. The cases occurred in twenty-three administrative areas.

In *Scotland* the notifications of dysentery were 20 higher than last week. The largest returns were Glasgow 42, Edinburgh 31, Ross and Cromarty County 12.

In *Eire* another increase of 37 in diarrhoea and enteritis was reported. 115 of the 161 cases were recorded in Dublin C.B.

Quarterly Return of the Registrar-General for Scotland

During the second quarter of this year the birth rate in Scotland was 20.5 per 1,000 and was 1.3 above the average for the five preceding June quarters. Infant mortality was 57 per 1,000 live births and was 10 below the five-years average. Maternal mortality was 3.6 per 1,000 live births, this rate being 0.5 below the average of the five preceding second quarters. The general rate was 12.2, being 1.1 below the five-years average and the lowest rate ever recorded for any second quarter. The death rate from tuberculosis was 79 per 100,000 for all forms and 57 for respiratory tuberculosis; these rates were 8 and 7 respectively below the five-years average. The death rate from the principal epidemic diseases, 16 per 100,000, was only half of the average rate for the five preceding second quarters. The deaths in this group included influenza 51, whooping-cough 49, diphtheria 45, cerebrospinal fever 27, measles 21.

Week Ending September 2

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,137, whooping-cough 1,389, diphtheria 445, measles 1,069, acute pneumonia 297, cerebrospinal fever 27, dysentery 419, paratyphoid 13, typhoid 10, poliomyelitis 25, polio-encephalitis, 7.

Medical News

A Regional Conference on Population Problems, under the auspices of the British Social Hygiene Council, will be held at the Reardon Smith Lecture Theatre, National Museum of Wales, Cardiff, on Friday, Sept. 29. The object is to consider the more effective application of present scientific knowledge to this urgent social problem. Those attending will represent education, health, medicine, law, economics, social welfare, and the Services. The conference will be divided into two sessions, to be preceded at 10.45 a.m. by a civic welcome by the Lord Mayor of Cardiff. The hon. secretary of the local Conference Committee is Dr. J. Greenwood Wilson, F.R.C.P., Public Health Department, City Hall, Cardiff.

Twenty-six cases of blindness caused by flying bombs have already been notified to the National Institute for the Blind. They include 7 men, 13 women, 5 young people, and a child of 18 months. The baby is in one of the Institute's Sunshine Homes, and ten of the others are at its Homes of Recovery receiving special training for their changed conditions ahead. Some are still in hospital. Relatives of such casualties are urged to notify the National Institute, 224, Great Portland Street, W.1, as soon as the medical verdict is known. In the earliest days much can be done to restore the blinded person's confidence, and training can be begun during convalescence.

In view of the continuance of emergency conditions the Minister of Health has extended until March 31, 1946, the period during which complete arrangements under the Cancer Act, 1939, should be submitted by local authorities.

Dr. James Ferguson, M.O.H., Surrey County Council, has been elected chairman of the Council of the Royal Sanitary Institute, to take office on Oct. 1.

Lieut.-Gen. Sicé, who recently visited France, as a delegate for the Free French social services and representative of the French Red Cross Society, to investigate conditions in Normandy, Brittany, and Anjou, has reported that, while the inhabitants of the rural districts have not suffered too severely from war conditions, the plight of adults and children in towns and cities is serious. He found no sign of epidemics, but the general level of health was not good, especially in Normandy. Substantial medical supplies had been sent for the immediate use of children and sick persons, but one of the chief difficulties was that no great ports were available in France. Lorries loaded up in this country were taken on board ship and disembarked without unloading, so that they could drive straight away after landing. General Sicé paid a tribute to the British Red Cross organization for what it had already done, but added that milk, condensed milk, and fats or halibut and cod-liver oil were required for children who had long been almost completely deprived of fats, and also meat extracts for anaemic children. The child mortality was very much higher than in normal times, especially as a result of tuberculosis.

The use of dried milk in combating gastro-enteritis, which has become prevalent among young children in Glasgow, is advised by Sir Alexander Macgregor, M.O.H. for the city. Where liquid milk is given to babies, mothers are advised to boil it first.

The Services

Fl. Lieut. Alfred George Spencer, R.A.F.V.R., and Flying Officer Albert Arthur, R.A.F.V.R., have been awarded the George Medal. The citation in the *London Gazette* reads as follows:

One day in February, 1944, an aircraft, carrying a 500-lb. bomb and incendiaries, crashed near a Royal Air Force station and immediately caught fire. Flying Officer Arthur, a gunnery instructor, was soon on the scene, and despite the great heat and exploding ammunition, he attempted to rescue the crew. Shortly afterwards he was joined by Fl. Lieut. Spencer, the station medical officer. The wreckage was blazing from end to end, and several times these officers were compelled to break off their rescue attempts. Flying Officer Arthur entered the burning aircraft no less than four times, with a handkerchief tied round his nose and mouth. At the fourth attempt he was driven back by the heat and flames, his eyebrows being burnt off and his right trouser leg and pocket burnt. Fl. Lieut. Spencer stayed close at hand and searched in the wreckage for possible survivors. It was not until the bombs were red hot and Fl. Lieut. Spencer was certain that the crew must be dead from the heat that these officers abandoned their efforts. They then warned the fire party to withdraw and cleared the area of spectators just before the 500-lb. bomb exploded. Although the attempts of these officers to rescue the crew were in vain, they displayed high courage and a complete disregard of their own safety.

CASUALTIES IN THE MEDICAL SERVICES

Capt. EDWARD NEIL WHITLEY, R.A.M.C., who was wounded in Normandy in June and died at a hospital in England on Aug. 29, aged 26, studied for the medical profession at Cambridge and at the London Hospital, qualifying M.R.C.S., L.R.C.P. in 1942; in November of that year he joined the R.A.M.C. as a temporary lieutenant, after serving as receiving-room officer at the London Hospital.

Killed in action in Normandy while attending wounded.—Capt. R. J. D. Carrick, R.A.M.C.

Died of wounds.—War Subs. Lieut. T. Notman, R.A.M.C.

Wounded.—Temp. Col. R. D. Cameron, M.C.; Temp. Lieut.-Col. G. C. Dansey-Browning; Temp. Major M. F. X. Slattery; Capt. W. J. Morrissey; War Subs. Capts. W. N. Calder, W. F. Caldwell, S. Conlan, J. Cowan, T. S. Jones, T. S. Maw, W. H. P. Minto, J Morrison, J. G. Mott, G. M. Sinclair, and A. Young; Lieuts. I. G. D. Bell and W. G. Harding, R.A.M.C.

Universities and Colleges

UNIVERSITY OF EDINBURGH

The Nuffield Provincial Hospitals Trust, on the recommendation of its Scottish Advisory Committee, has made a grant in aid of further research in neonatal and infant problems, to be carried out by the Department of Child Life and Health of Edinburgh University at the Simpson Maternity Pavilion. The research will be directed by Prof. Charles M'Neil and the experiment will be under the auspices of the University and the Royal Infirmary of Edinburgh.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Faculty held on Sept. 4, the President, Dr. James H. MacDonald, in the chair, the following was admitted a Fellow of Faculty *qua* Physician: R. Y. Keers, M.D. R. Mailer, M.D., F.R.C.S.Ed., was admitted a Fellow of Faculty *qua* Surgeon.

Letters, Notes, and Answers

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ANY QUESTIONS?

Sensitivity to Sulphonamides

Q.—*Is there any way of desensitizing a patient who is hypersensitive to sulphathiazole? One gramme of the drug causes irritation of the hands, round the edges of the lips, and round the anal margin, with the formation of an urticarial rash on the dorsum of the hands. Sulphapyridine causes a similar reaction.*

A.—It is not really possible to give a safe answer to this question as experience has been so limited. The available literature was reviewed in the *Lancet*, 1944, **1**, 406, and the *Journal*, 1944, **2**, 248. It is shown that desensitization to the sulphonamides has been brought about by oral administration of the drug to which the patient is sensitive, beginning treatment with a small amount—e.g., 0.1 g. b.d.—and rapidly stepping up the dose—e.g., to 1.0 g. five times a day on the 8th and 9th days. The procedure seems hazardous in view of the risk of exfoliative dermatitis and other complications. Desensitization might more safely be begun by the injection of blood serum from a donor who has been taking sulphathiazole for five days. Such serum contains an antigen which causes an allergic type of response after intradermal injection in sensitive individuals. The initial dose would be 0.05 c.cm. It is not known whether this technique has actually been put into practice. Neither of these procedures can be strongly recommended now that penicillin is becoming available and sulphonamides are presumably no longer indispensable. Nothing is to be gained by trying other sulphonamides as the patient is almost certainly sensitive to the sulphanilic acid radicle, which is common to the whole group.

Tubercle Bacilli in Junket

Q.—*A patient tells me it is a well-known fact that in the process of making junket any tubercle bacilli in the milk will be destroyed, but I can find no reference to this in the literature. I should like authoritative information on the subject.*

A.—We know of no evidence to support this statement. Observations on Cheddar cheese made from infected raw milk have shown that tubercle bacilli may survive for several weeks. In cheese-making, in which both an acid-producing "starter" and rennet are used, the acidity reached is considerably higher than in the preparation of junket, in which rennet alone is used. If it is assumed that the acid is mainly responsible for the gradual destruction of tubercle bacilli in cheese—at any rate in the early stages of ripening—it is difficult to understand why junket should prove more active in this respect than cheese. This statement might be classed with other "well-known facts," such as that junket cannot be made from pasteurized milk, which are known to be cherished fallacies.

Ingrowing Toenail

Q.—*What is the best palliative treatment for ingrowing toenail? When should one decide that removal of the nail is necessary?*

A.—There are several palliative methods of treatment for ingrowing toenail which are adopted in home treatment. The best-known are cutting a V-shaped wedge from the free edge of the nail as far back as possible towards its root (rather hard on the socks), scraping or filing the centre of the nail so that it can arch upwards and thus relieve some of the pressure on the lateral grooves, or applying a small piece of thin metal foil under the lateral nail edge and bringing it out over the rolled-over fold of skin. A most important point is to determine whether there is a spicule (splinter) of nail growing forwards in the lateral groove due to the difficulty of cutting the nail right out to its hidden lateral margin. This spicule must always be removed, for it is a common cause of pain and produces a portal of entry for infection. None of these measures is more than palliative. If the nail causes repeated trouble and disability there should be no hesitation in advising radical surgical

treatment. Removal of the nail is unsatisfactory, even when the nail bed is included; the most certain treatment is partial amputation of the terminal phalanx, including of course the whole of the nail bed, by a long plantar flap. This leaves a slightly shortened nailless toe which heals rapidly and results in no disability whatsoever.

Male Climacteric

Q.—A professional man of 50 years for the past months has had very little sexual desire, and penile erection has been difficult to attain and lasts for a very short time. Intercourse has gradually diminished in time till now it lasts only seconds. Is this a case of "male menopause"? If so, what hormone therapy will restore the sexual powers?

A.—This may be a case of male climacteric, although the age is somewhat early. (The term "menopause" means cessation of menstruation, and should not be used, therefore, in the case of the male.) If the diagnosis is correct 25 mg. of testosterone daily, intramuscularly, should produce improvement within two weeks; then treatment could be continued with methyl testosterone, 5 to 10 mg. three times a day, allowed to dissolve under the tongue, or by implantation of 600 mg. of testosterone in the subcutaneous fat. Should there be a complete absence of response, the question of psychological impotence should be considered.

Arum maculatum

Q.—A child recently was believed to have swallowed the seeds of Arum maculatum (cuckoo-pint, lords-and-ladies). In three elementary books these seeds are described variously as dangerously poisonous, poisonous, and medicinal. I should be obliged if you would kindly say whether these seeds are in any way harmful.

A.—All parts of the plant of the *Arum maculatum* are poisonous. The reason why different books describe this plant as "dangerously poisonous," "poisonous," and "medicinal" may be due to the fact that most substances which are medicinal in small doses may become poisonous or dangerously poisonous in greater doses. The root particularly contains an acrid juice which acts as a powerful irritant, and although it has been used medicinally as a diuretic and stimulant, and occasionally as a purgative, its use has now been discontinued. The seeds are less poisonous than the tubers, but it may be quite definitely stated that they are poisonous.

Rorschach Test

Q.—Where can I obtain the materials necessary to carry out the Rorschach test for temperamental traits? Can the interpretation of the test be self-taught? Which books should be read?

A.—The Rorschach test cards have been on sale at Messrs. H. K. Lewis, Gower Street, London, W.C.1, but are in short supply. The interpretation can be self-taught, but only at the expense of great time, trouble, difficulty, and mistakes. The Rorschach Institute in the U.S.A. demands a 3-year period of training! Read Rorschach's original work, of course—i.e., Hermann Rorschach, *Psychodiagnostics*, translated into English by Lemkau and Kronenberg, Verlag Hans Huber, Berne, Switzerland (distributed in the U.S.A. by Grune and Stratton, New York); also Samuel J. Beck, *Rorschach's Test*, Vol. I, *Basic Processes*, Grune and Stratton, New York. And a simpler manual for the beginner is Klopfer and Kelly, *The Rorschach Technique*, Harrap.

Seasickness

Q.—Is there any effective treatment for seasickness? The problem arises in respect of an apprentice to the Trinity House Service. He is very keen to remain at sea, but in bad weather is frequently too ill to perform his duties, and he fears he will be invalided from the service.

A.—A large number of remedies have been proposed for seasickness. Physiotherapeutic measures probably act mainly by suggestion and do not seem to be effective. Drugs with most reputation are those which depress the parasympathetic nervous system—e.g., atropine, hyoscine; those which stimulate the sympathetic nervous system—e.g., amphetamine or benzedrine, and methedrine; and those which depress the central nervous system—e.g., chlorbutol and barbiturates. Careful studies carried out on sea-borne troops in this war suggest that hyoscine in doses of 1/100 gr. is the only remedy which will significantly reduce seasickness and at the same time will not impair efficiency. These results, however, apply only to short voyages, and it is doubtful whether hyoscine can be expected to inhibit seasickness over a period of days. Many famous sailors, including Lord Nelson, were sick whenever they returned to sea again. In such cases acclimatization occurs in about three days and persists so long as the sailor is in the same type of ship. Acclimatization wears off after about three weeks on shore. In a few instances acclimatization never occurs and the subject is always unhappy in rough weather. The tendency nowadays is to think that in these men the mind is divided against itself and the superficial keenness really hides a latent or unconscious distaste for the sea. Certainly no physical or pharmacological remedy is likely to prove effective, and the victim would be well advised to take up another profession while he is still young.

Girl with Large Breasts

Q.—An active girl aged 18, of normal height and weighing 12 stone, is unhappy about the largeness of her breasts. She is very sociable, but the size of her breasts makes it difficult for her to "look well-dressed" and makes her feel self-conscious when she is playing tennis. She is in excellent health, with no menstrual troubles. She is not worried because she is stout, but because her bust is so large. What is the best treatment?

A.—While oestrogens do develop inadequate breast tissue, it is much more difficult to reduce excessive breast tissue or adiposity which is localized in the breast region. Testosterone in large doses might reduce breast tissue, but only by suppressing ovarian activity and producing some degree of hirsutism, the end-result being worse than the initial stage. Diet and thyroid combined with mercurial diuretics might reduce the general adiposity, and incidentally the adiposity in the breast region, but it is questionable whether these are worth while in view of the excellent general health. Plastic surgery sometimes produces excellent results, but not invariably so, and should not be lightly undertaken. On the whole it would appear that a philosophical and psychological approach, which would permit the patient to accommodate herself to her build, is the best course.

Tetanus Prophylaxis

Q.—What modifications has the experience of war brought to tetanus prophylaxis, and what differences still exist between the English and American methods? What course of prophylaxis would you suggest for an agricultural community, and how often should it be renewed? Should farm workers be immunized?

A.—The English fighting Forces and the American Army immunize soldiers on enlistment with tetanus toxoid; the American Navy uses alum-toxoid. Two or three injections spread over about six weeks are customary. The tendency is to repeat one or more of these doses periodically—e.g., at six- or twelve-monthly intervals and prior to battle service. Thus far there is no fundamental difference between the English and American methods (*Journal*, 1943, **2**, 818). The main difference is in the treatment of the wounded soldier. The American practice has been to inject prophylactic toxoid (or alum-toxoid) into the patient, the aim being to elicit a rapid rise in the man's own self-produced active immunity that will outmarch the production of toxin in the wound. The English authorities believe that this rise may not occur rapidly enough, so they inject antitoxic horse serum, so-called "antitoxin," which gives immediate passive immunity. Probably almost all English immunologists are convinced on the evidence that the English plan is sound, and some American writers favour it.

Among agricultural workers the risk is small; tetanus rarely occurs. The tetanus bacillus requires special conditions for its dire work. A deep war wound with much necrosed tissue or damaged muscle deprived of proper blood supply through arterial damage—plenty of nutrient for the bacillus with little or no oxygen present—provides ideal conditions. So, too, would a compound fracture of the leg of a farm worker crushed by a wagon-wheel in a dung-soiled yard or field. But such lesions are rare in farm practice. Two courses are open to the doctor. (*a*) If he is cautious and leans strongly towards insurance, he will inject all farm workers with two doses of toxoid separated by six weeks. He can increase the insurance against risk by giving, as in the Army, a reinforcing dose every twelve months. He will thus confer a high protection. In France in 1940 and after Dunkirk eight cases occurred, all in unimmunized men, and later experience in the Middle East and in the American Forces (see *Amer. J. publ. Hlth.*, 1944, **34**, 29) fully bore this out. If his farm worker is injured the doctor will also give a dose of tetanus antitoxin—e.g., 3,000 units. (*b*) Probably the average practitioner will compromise and, in view of the smallness of the risk, will not urge active immunization on his patients. He will always have at hand tetanus antitoxin—modern enzyme-treated or refined, little liable to cause reaction—and will give at least 3,000 units intramuscularly when he meets with a compound fracture of the kind instanced or a deep puncture with the prong of a dung-soiled fork, or even any wound that is not superficial (*Journal*, 1943, **2**, 818).

B. coli Bacilluria

Q.—Is it safe to continue mandelic acid therapy for a bacilluria (heavy infection, B. coli) over a long period? At what period would it be considered useless to continue?

A.—It should first be pointed out that during mandelic acid treatment the *p*H of the urine should be watched, and reduced to 5.0, if necessary, by the administration of ammonium chloride in addition. If this has not been done it may be the reason for the failure of the treatment. A fortnight should be regarded as the

longest period for which it is likely to be useful to continue such treatment: it should usually achieve its effect in a week. The dangers of this treatment are acidosis and renal damage. Acidosis is not likely to be produced if renal function is good, but hyperpnoea should be watched for, and the alkali reserve estimated should it occur. Some degree of renal damage, if only temporary, is indicated by the presence of large numbers of casts in the urine, and this finding contraindicates long continuance. If the infection is, as stated, due to *B. coli* alone, and unaccompanied by any other lesion of the urinary tract, it should also respond to sulphanilamide.

Cumulative Effects of Phenobarbitone

Q.—*In a reply to a question on the treatment of whooping-cough (Aug. 12, p. 230) you advise phenobarbitone gr. 1/4 b.d. for a child of 1 year, provided cumulative effects are watched for. What are the cumulative effects? I have given it to adults for years and never seen any. Secondly, what dose would you consider safe for a child aged 1½ years, and for one aged 2 years, who are suffering from insomnia? They are active, intelligent children, quite healthy, and in London. They sleep in surface shelters, and keep both the mothers and others awake, to the distress of the mothers. The ordinary bromide and chloral mixtures—e.g., N.W.F.—have been useless, and I have been afraid to push the phenobarbitone further than 1/4 gr., as my experience with this drug in infants is limited.*

A.—Cumulative effects of phenobarbitone are dizziness, lethargy, weakness, and inability to concentrate. In addition symptoms of idiosyncrasy are more prone to arise if the drug be given over a period of weeks. These are fever, itching, erythematous rashes, nausea, vertigo, diplopia, ataxia, and slurred speech. I should not use phenobarbitone as a hypnotic in young children. Its action as a hypnotic is relatively feeble. For the children in question 10 gr. bromide and 5 to 7 gr. chloral should succeed.

A Case for Investigation

Q.—*A woman aged 59, since x-ray treatment of hyperthyroidism 4 years ago, has complained of severe paroxysms of headache and abdominal "spasms." The heart beats violently in the attacks. The noises in the head, and headaches, compel her to hold her head. She is incapacitated by the illness. She sleeps very little. No collapse after the attack (cf. adrenosympathetic). Functions normal except severe constipation. On examination she is well covered, is garrulous, and has patchy hyperaemia on chest. Pulse 108; B.P. 170/100. No tremors; no sweating. Routine urine examination normal. Amino-acids nil. Blood sugar 68 (repeated). I should particularly like to know whether the symptoms could be attributed to the hypoglycaemia, and whether this has been known to follow x-ray treatment of hyperthyroidism. There is no anaemia and no evident hypothyroidism. Vitamins in urine have been estimated, and this will be repeated after test dosage.*

A.—It is not clear why elaborate vitamin studies should have been made in a case of this kind. The first question is whether the patient is suffering from hyperthyroidism, which might well account for her present symptoms; for this purpose the basal metabolic rate and the serum cholesterol are the relevant tests. Parathyroid tetany is unlikely to be present, but this possibility could be excluded by examination of the serum calcium. Hypoglycaemia is not known to follow *x*-ray treatment of hyperthyroidism. In any event hypoglycaemic attacks should not be diagnosed unless (1) the fasting blood sugar is below 60 mg. per 100 c.cm., (2) the blood sugar is below 50 mg. per 100 c.cm. in an attack, and (3) the symptoms are relieved dramatically by the administration of glucose. Other possibilities in this case are psychoneurosis, Ménière's syndrome, migraine, and paroxysmal hypertension; in fact the range is too wide to give help without seeing the patient. As she has been ailing for some years it would seem wise to get a second opinion from a medical consultant who can view biological data and vitamins in their proper perspective.

Falling Hair

Q.—*A married woman of 38 has been going grey for the past 6 years and the hair is continually falling out. There is no excessive seborrhoea, although the scalp is dry. She is perfectly healthy except that her periods are irregular and scanty. Can you suggest a remedy for this condition?*

A.—Loss of hair may be attributed to both general and local causes. Thus the sudden loss of hair after fevers and the less abrupt thinning accompanying debilitating conditions are well known. Changes in the hair in certain hormonal diseases represent a part of the symptom-complex, as in myxoedema, where the phenomenon may render a patient almost unrecognizable. Men tend to become bald, women do not—a sex distinction which may be relied upon, with, of course, certain exceptions, to base a reassuring prognosis in women where the hair is falling out and where there is fear, without reason, of the onset of complete baldness. If seborrhoea is present, even if only represented by dryness or a little dandruff, the outlook is favourable, and with treatment a considerable improvement may be expected. Pomades and lotions are not favoured because of their messy nature, but this disadvantage can be avoided by applying a *small quantity* of an ointment containing 6% sulphur and 3% salicylic acid, a soft base to the ounce—i.e., arachis oil and vaseline. This is well rubbed into the scalp one night in the week and washed out the next morning, a simple procedure easily carried out provided only a small quantity of the pomade has been used and well rubbed into the scalp. A resorcin lotion applied every morning enhances the result, but this is unsuitable for light or grey hair as it stains a yellow-brown. The application of ultra-violet radiation, or high frequency, the hairdresser's "violet-ray," is no better than a thorough brushing. Women's hair was more healthy and profuse before the change of fashion shortened it, because the prolonged nightly brushing and attention improved and maintained its condition. It is well, however, always to inform the patient that hair coming out following the application of a pomade or a shampoo is to be disregarded, as it is only the loose hair which has been cast.

LETTERS, NOTES, ETC.

Yeast in Furunculosis

Dr. M. A. COOKE (Bradford) writes: I was interested to read the letter of Dr. Watson Smith concerning the use of yeast in furunculosis (Aug. 19, p. 256). There is little doubt of its usefulness in certain cases of furunculosis and other skin lesions. Its action has been variously ascribed to its fermentative properties, to its vitamin B content, and also to its nuclein fraction. Supporters of the latter theory claim that yeast is as active therapeutically after it has been heated to 130° C. for about an hour. Concerning the local action of yeast, this has for some time been used in "face-packs"; not, however, with very marked results. This latter fact may be a result of the comparatively inert form of the yeast. I certainly agree with Dr. Watson Smith that brewers' wort is the most therapeutically active form; patients who have taken it not only appear to recover more quickly, but also testify to feeling brighter. It is, of course, difficult to exclude the psychological factor in view of the difficulty of arranging suitable controls. It is possible that it would be more efficacious if applied locally in the actively fermenting form. With reference to the analogy to penicillin, Gram-stained preparations of yeast almost invariably show staphylococci in addition to the various yeasts and fungi always present. This, however, would not exclude the fact that yeast may contain a fraction lethal to these and other organisms under certain conditions of purity and acidity. Certainly, as Dr. Watson Smith states, the pharmacological action of yeast offers many riddles to solve.

Wasp and Bee Stings

Dr. H. S. RUSSELL writes: The answer to the question about relief of pain (Aug. 26, p. 295) omits reference to the most effective method—1 c.cm. intradermal wheal of novocain adjacent to and including the sting. Relief is complete, immediate, and lasting.

? Case of Alkaptonuria

"GAMMA" writes: I was interested in the "Any Questions?" answer about a vaginal discharge (Aug. 26, p. 296). Would it be possible for the inquirer to test the urine for homogentisic acid, as it sounds like a case of alkaptonuria which has not been diagnosed hitherto? If this is the case, it is not the discharge which is staining the underclothes but the urine, which after the birth of the child tends to leak away more than it did and so now attracts attention.

"Vitamin B Deficiency in Allergic Patients": Correction

Dr. ARTHUR F. COCA, Medical Director, Lederle Laboratories, New York, writes: Referring to my previous communication [July 22, p. 128] concerning the article by Drs. McSorley and Davidson, I have to apologize for overlooking the fact that they were referring to the anti-anaemic liver extract, not the preparation of vitamin B complex.

Correction

In our column of Medical News (Aug. 26, p. 294) Miss Florence Horsbrugh, M.P., was reported as stating that more than 300,000 beds in maternity homes have been provided during the war. The figure should of course have been 3,000.

T. J. Smith and Nephew Ltd., Neptune Street, Hull, have issued a pamphlet *Plaster of Paris in the Treatment of Burns*. This, they state, has been compiled with the help of surgeons with experience of war and civilian casualties, and it includes references to recent literature on treatment of burns. So far as restricted supplies allow, a copy will be sent to any doctor on request.